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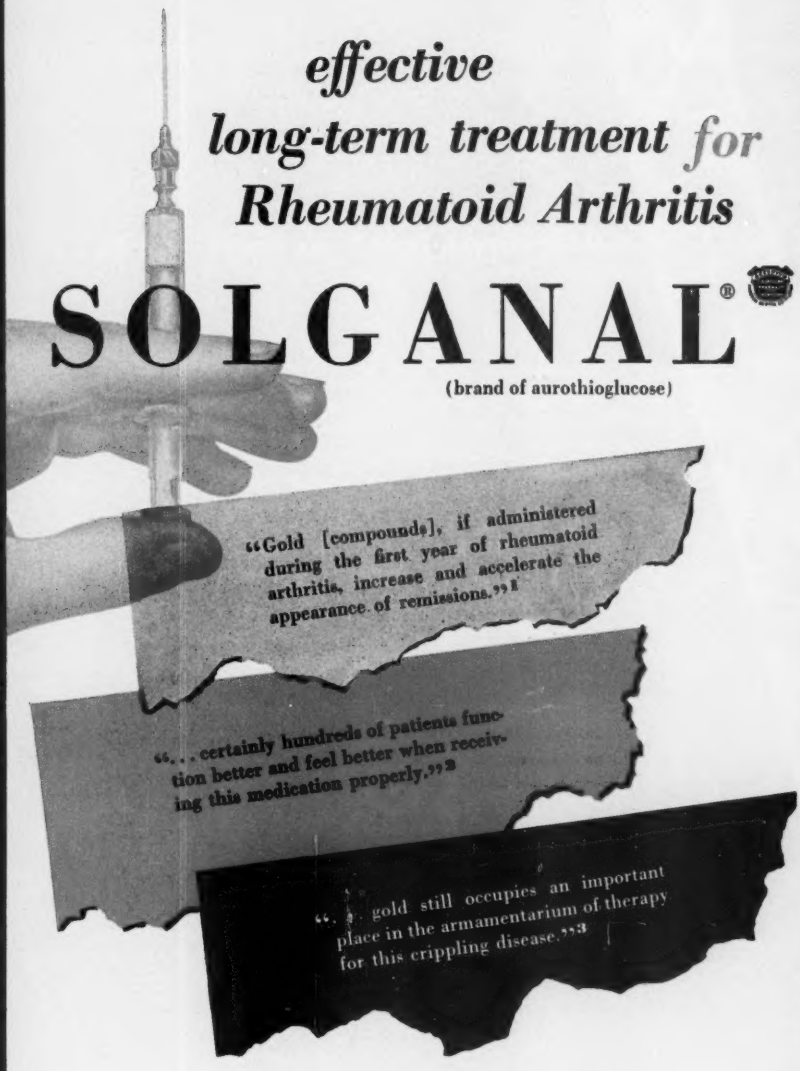
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1 Adams, C. H., and Cecil, R. L.: Ann. Int. Med. *33*:163, 1950.
2 Bayles, T. B.: Medical Forum, Mod. Med. (no. 24) *18*:86, 1950.
3 Gilbert, J. T., Jr., and Moore, F. H.: J. Kentucky State M. A. *48*:308, 1950.

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1. Clinical Nutrition: ed. by N. Jolliffe et al., Hoeber, 1950.
2. Hanke, M. T.: Diet and Dental Health, Chicago Univ. Press, 1937.
3. Jeans, P. C.: J.A.M.A., 142:806, 1950.
4. Joslin, C. L. and Bradley, J. E.: Personal communication.
5. Krehl, W. A. and Cowgill, G. R.: Food Research, 15:179, 1950.
6. McLester, J. S.: Nutrition and Diet in Health and Disease, Saunders, Phila., 4th ed., 1944.
7. Moore, E. L. et al.: J. Home Econ., 37:280, 1945.
8. Roy, W. R. and Russell, H. E.: Food Industries, 20:1764, 1948.
9. Sherman, H. C.: Chemistry of Food and Nutrition, Macmillan, 7th ed., 1946.
10. Silverman, A. C.: New York J. Med., 47:1967, 1947.
11. Stevenson, S. S.: J. Pediat., 31:616, 1947.


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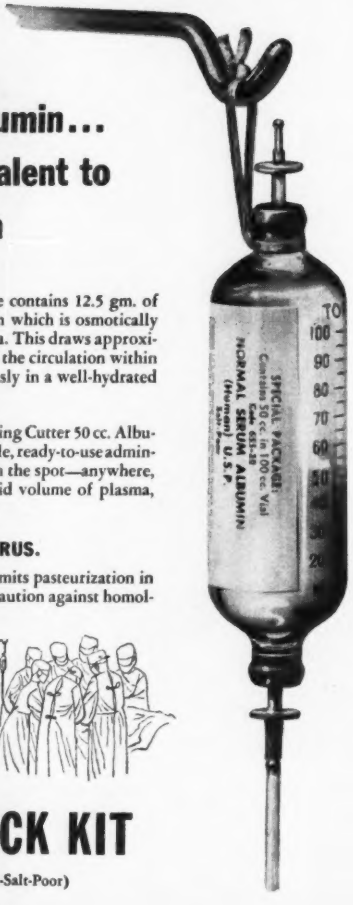


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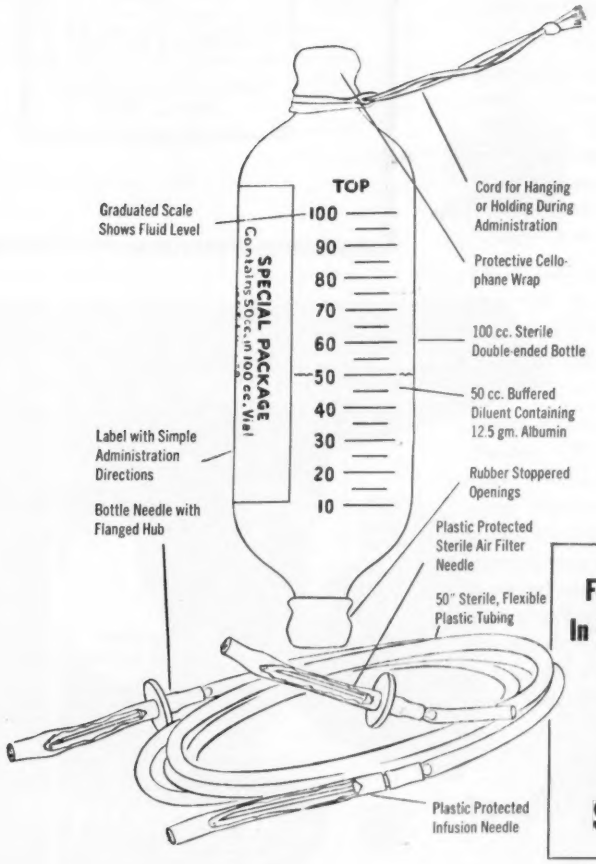


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Volume 245 OCTOBER 18, 1951 Number 16

# PRESENT CONCEPTS CONCERNING THE SURGICAL MANAGEMENT OF DUODENAL ULCER*

ARTHUR W. ALLEN, M.D.†

BOSTON

PRESENT concepts of the surgical treatment of duodenal ulcer are still controversial, just as they were at the beginning of our professional lives. The fact that new methods of surgical treatment and various combinations of new and old are being fostered is evidence enough that we have not as yet solved this problem. The situation, however, is less confused than formerly, and the majority of patients with duodenal ulcer are now relieved of their ailment in one way or another.

Duodenal ulcer is the result of some mysterious and as yet incompletely understood derangement of the normal physiologic processes of the stomach. It is, in a way, comparable to hyperactivity of the thyroid gland. Although the physiologic imbalance of the thyroid gland is well understood, there is still no clear knowledge of the reason for this disarrangement. Duodenal ulcer does not develop in a patient whose stomach secretions are free of, or low in, hydrochloric acid. An excess of acid is associated with hypersecretion of all the gastric elements. Methods suggested to combat this abnormality have been numerous; they range from postural exercises to psychotherapy. It was learned early by physicians and their patients, by trial and error, that bland foods, alkalis, lack of worry and strain and abstinence from irritating substances such as alcohol were all conducive to decreased acidity and increased comfort. The actual causes of these symptoms were not accurately understood in most cases until after Cannon and Moser[1] discovered that ingested barium could be used to visualize the hollow viscera in the x-ray film. Rapid progress in diagnostic methods soon developed. With this came increased interest in treatment from both the physician and the surgeon. Physiologists knew that the normal juices of the duodenum, arising mainly from the liver and pancreas, satisfactorily neutralized the acid secretions of the stomach in normal persons. Therapy was directed toward lowering the acidity by conservative measures available to the internist and by mechanical procedures devised by the surgeon.

*The second annual Peer P. Johnson Lecture in Surgery, presented at the Beverly Hospital, Beverly, Massachusetts, May 12, 1951.

†Consultant in surgery, Massachusetts General Hospital.

Moynihan[2] was the most forceful among the earlier surgeons in advocating the surgical correction of this problem; he was responsible for the institution of gastroenterostomy on countless duodenal-ulcer victims. It was some time before it became evident that this procedure was not the panacea that it seemed at first. Finney[3] believed that the same effect could be produced by a pyloroplasty, without the hazards that were becoming obvious as frequent sequelae to gastroenterostomy. At about the time this controversy was taking place, Edkins[4] showed that the acid-activating cells in the stomach were all contained in the antrum. It took some years, however, for surgeons to realize that permanent lowering of the gastric secretions could be brought about mechanically only by the complete elimination of this segment of the stomach. The early gastrectomies for duodenal ulcer were supposed to eliminate the antral cells but were so frequently not extensive enough to include them all that failures were common. Connell[5] thought that a better result could be obtained by ignoring the antrum and excising the major portion of the fundus, which harbored the actual acid-secreting cells. Modifications of all these procedures were championed, and the confusion increased.

After the initial stampede to gastroenterostomy and so forth, there was a lessening of interest in the physician and his conservative measures for the relief of duodenal ulcer. Gradually, however, there developed, in this country and elsewhere, men who really made it their chief interest in life; many of these workers became known as gastroenterologists. Patients with duodenal ulcer were kept comfortable, and many of them were completely relieved of all symptoms by these specialists, who, with meticulous care and guidance, treated them along sound physiologic lines. Now, it is recognized that the majority of cases of duodenal ulcer are adequately managed by conservative regimens. Only those patients whose ulcer produces one or more of the so-called complications need be subjected to surgery. This group will comprise from 15 to 30 per cent of all patients with duodenal ulcer admitted to various

clinics in this country. It is interesting to note that in 1929 Fremont-Smith and McIver[6] found that about 81 per cent of the patients surviving surgical treatment for duodenal ulcer (usually gastroenterostomy) remained well. In other words, almost the same percentage of patients who did well after surgery, in the period when nearly all of them were operated on by this simple procedure, are now kept well on conservative measures. It is reasonable to deduct that the majority of the failures were, in fact, in the same type of patients now considered suitable for surgical treatment.

The surgical indications for the treatment of duodenal ulcer at present are: acute perforation, which in my opinion is still best managed by early simple closure; cicatricial obstruction, which develops in a certain proportion of duodenal-ulcer patients, usually after years of repeated bouts of activity, and requires surgical intervention for mechanical, if for no other, reasons; and massive hemorrhage from duodenal ulcer, which has come into the category of complications that warrant surgery — in the older age group as an early procedure and in the younger patient as an operation of election. In addition to these three commonly accepted types, there remains an ill-defined group of patients who appear to be *intractable* to all forms of conservative treatment. This group is large in certain areas or districts and smaller in others, depending apparently on numerous factors. It is true that with better understanding of the problem by both internists and surgeons and with decreased operative morbidity and mortality, this group of patients may grow. In other words, many of them are so invalided by their disease that surgical intervention may be more justifiable, at the present low risk, than was the case in former years.

There gradually came about an almost universal practice of so-called subtotal gastrectomy for duodenal ulcer, when any surgery was undertaken for curative measures. Some minor variations were advocated by different men experienced in this field, but by and large the procedure was much the same. Certain principles were generally agreed on, particularly in regard to the complete elimination of the antral segment of the stomach. It was soon learned that, regardless of the extent of the resection, if this did not include all of the antrum anastomotic ulcer would develop. There was considerable discussion about the importance of including in the resection the ulcer-bearing area of the duodenum, which though preferable is not essential to a good outcome. Aside from these details, there remained one disputed point; that was in regard to the short-loop posterior hook-up versus the longer-loop antecolic anastomosis. Series of clinical reports were appearing in the literature of creditable results from subtotal distal gastrectomy for duodenal ulcer. The mortality was low, averaging about 2 per cent in the past decade. The morbidity was low, as far as anastomotic ulcer was concerned, averaging about 5 per cent. There were, in addition, a few patients whose postoperative symptoms were disabling but of a different nature from those produced by the ulcer. These were based on the small remaining portion of stomach and on the rapid emptying of this segment into the small intestine. "Dumping syndrome" became a term commonly heard, and gave the internist something new to deal with. On the whole, however, this operation gave complete satisfaction to the patient in about 85 per cent of the cases.[7] Many of these patients, having suffered long and with continued apprehension concerning new bouts of activity of their ulcer and its complications, were well pleased. It was often difficult to justify to them their years of palliative management. It was not hard, however, for the surgeon who has witnessed the failures of former years of trial and error and the slow development of surgery to a reasonably safe level to make them understand the reluctance with which such procedures have been accepted.

At about this stage of our knowledge, Dragstedt[8] and his associates reinterested the profession in the attack on this problem by elimination of the vagal influence. Pavlov[9] found, nearly a half century ago, that the secretions from the stomach pouches of his experimental animals were greatly reduced in quantity if the vagus nerves were severed. Other workers substantiated this observation but came to the conclusion that the effect was transient and clinically impractical. It is probable that more serious notice would have been taken of the possibilities of this attack on the ulcer problem if the profession had not been so much interested in the antral acid-stimulating cells demonstrated by Edkins.[4] It took many years, with the first World War intervening, to discover the inadequacies of short circuit and other lesser procedures. The slow realization that subtotal gastrectomy gave a high percentage of successes overshadowed all other surgical possibilities for a long time. Every clinician, however, believed that sooner or later physiologists would bring to light a less radical and more rational method of restoring normal physiology to the stomach in patients with duodenal ulcer.

It was natural that we, as well as many others interested in this problem as a whole, should be desirous of finding out for ourselves just what could be expected from the removal of the vagal influence. Moore[10] had done some research and thinking along these lines, so it was agreed by the interested group at the Massachusetts General Hospital that we should turn this matter over to him. He came to the conclusion that, for evaluation of this procedure on its own merits, certain basic principles must be followed. Therefore the patients selected for this operation were in the younger age group, had been treated with the best known conservative measures and had no obstructive symptoms. Although a

few of them had previously bled, as a group they were considered to have no complications. It was further decided that resection of the vagi would be best accomplished transthoracically and that the nerves from the lung roots to their branchings in the stomach wall should be removed. In addition, in order to prevent re-establishment of continuity, it was decided that the proximal segments of these parasympathetic nerves should be enclosed in an impervious silk cylinder, as advocated by Smithwick and White.[11] The final concept was to avoid combining vagus resection with any other procedure known of itself to relieve duodenal ulcer in varying percentages, such as gastroenterostomy or gastric resection. During this period it was natural that those patients appearing with anastomotic ulcer from previous surgery should be subjected to vagus resection. Moore[10] has published the interim results on this group of patients. Briefly, he found this to be a satisfactory operation for anastomotic ulcer. His patients with uncomplicated duodenal ulcer were satisfactorily relieved for the time being, at least in about 87 per cent of the cases. The poor results were from causes entirely different from those found in our follow-up study of patients who had had subtotal gastrectomy but were considered equally disabling. Comparative data on these two groups of patients reviewed in 1947[12] left us with the belief that vagus resection *per se* should be used for anastomotic ulcer in all cases but that subtotal resection still gave us a more satisfactory procedure for the treatment of complicated cases of duodenal ulcer. This decision was influenced by several factors. First, we were dissatisfied with the results of vagus resection, in that we were limited to those patients who had no obstructive symptoms and who had not recently bled massively. Furthermore, too many of those with vagus resection developed early cicatricial obstruction that required laparotomy. Also, our transthoracic approach did not allow an evaluation of the situation within the abdomen. There were instances in which symptoms continued, with a high acid level, in patients known to have had a thorough and complete vagus-nerve interruption, suggesting that in a few persons there are other parasympathetic pathways. Consequently, the popularity of this procedure waned rapidly in our hospital.

It soon became evident to many observers that vagus resection alone was doomed to failure in the routine treatment of duodenal ulcer. Rapidly there came about a rather widespread use of subdiaphragmatic vagotomy with concomitant gastroenterostomy. The immediate results of this combined attack have been collected by the American Gastroenterological Association,[13-15] and some of these studies have been published. The final report should be available soon. It appears that this double operation can be carried out with a lower operative mortality than occurs in subtotal gastrectomy. Furthermore, the immediate results appear to be as good as those obtained by subtotal gastrectomy.

There are a few physicians who believe that the same results can be obtained by the constant daily use of cholinergistic drugs such as banthine. The side-effects of this drug are undesirable, and there is considerable distrust of this form of therapy among many of our most experienced clinicians. In some cases it appears that the lack of vagal tone produced by it elsewhere in the body offsets its beneficial effects in lowering gastric secretion. One urologist of note, himself a victim of duodenal ulcer, tells me that this drug makes it very difficult to empty the urinary bladder. He has, in fact, resorted to transurethral resection in a number of patients who were taking the drug for ulcer relief and who had had no previous urinary disability.

Anastomotic ulcer is probably due to the maintenance or recurrence of a high acid level in the stomach; it has done more to discourage the use of subtotal resection for duodenal ulcer than any other sequelae. Since this complication manifests itself in one third of the patients who will develop it in the first postoperative year and in another third in the second year, we have this brought to our attention before we can become too smug about our good results. It is strange that patients may be symptom-free for many years (in one case, twenty-one years) and then develop anastomotic ulcer. For these reasons some surgeons, notably Colp[16] at the Mt. Sinai Hospital in New York and Smithwick and others[17] at Boston University, have combined the usual subtotal gastrectomy with subdiaphragmatic vagus interruption. Both these observers believe that a more constant lowering of the gastric acidity can be obtained by this combination of procedures than by any others. In Smithwick's controlled studies, he deduces that vagotomy with gastroenterostomy and vagotomy with one-third distal resection were unsatisfactory as judged by their acid-level criteria. On the other hand, those patients with one-half distal gastrectomy and vagotomy were as much improved as those with two-thirds gastrectomy and vagotomy.

It will take some years to evaluate completely all these methods of treatment. In the meantime research continues, and sooner or later a simpler solution to the problem will be forthcoming. At this time it appears logical to me to draw the following conclusions. Some of the reasons have not been discussed here but are based on previous observations that have been published elsewhere.

Duodenal ulcer is the result of physiologic imbalance in the stomach secretions, manifested by an increase in hydrochloric acid. The mechanism is understood, but the cause is as yet unknown.

This continues to be primarily a medical problem, and the majority of patients with ulcer can be taught how to live with it and to maintain their status as economic units in society.

Surgery is indicated for the complications that develop in approximately one fourth of duodenal-ulcer patients. These precipitating factors are: acute perforation, cicatricial obstruction, massive hemorrhage and prolonged resistance to conservative treatment.

Acute perforation should be treated by early simple closure. If massive hemorrhage has been a predisposing factor, if the patient is a good risk and if ideal surgical conditions are available, radical surgery may be justified at this time.

Recurrent bouts of ulcer activity over a period of years may result in sufficient scar tissue to obstruct the duodenum. These patients, regardless of age, should be treated by radical surgery and not by simple gastroenterostomy unless they are very feeble.

Massive hemorrhages from duodenal ulcer almost invariably subside spontaneously in the young. In patients who have some arteriosclerosis, bleeding will often continue or will recur at frequent intervals during the episode. One third of the patients beyond the age of forty-five will succumb to acute anemia if treated conservatively. This age group should have the benefit of early radical operation. Those who recover from an episode of massive hemorrhage regardless of age should be subjected to radical surgery at a time of election, as experience shows that they will bleed again in future years. Close co-operation between medical and surgical staffs is vitally necessary for best results in this group of patients.

Subtotal gastrectomy including all of the antrum and the entire lesser curvature of the stomach, in ulcer patients, will give satisfactory results in at least 85 per cent of cases.

Vagus-nerve resection is the operation of choice in anastomotic ulcer. If the antrum has been entirely eliminated at a previous operation, the new ulcer will always heal. If such an ulcer has followed gastroenterostomy in continuity, the results are not so certain, but the majority of these patients will be relieved — for the the time being, at least.

Subtotal gastrectomy with subdiaphragmatic vagotomy may give a higher percentage of permanently satisfactory results than either procedure alone or than gastroenterostomy with vagotomy. This last procedure should be left for the elderly poor-risk patient.

## References


1. Cannon, W. B., and Moser, A. Movements of food in esophagus. *Am. J. Physiol.* **1**:435-444, 1898.
2. Moynihan, B. G. A. *Duodenal Ulcer.* 486 pp. Philadelphia and London: W. B. Saunders Company, 1910. Pp. 99 and 129-161.
3. Finney, J. M. T. New method of pyloroplasty. *Bull. Johns Hopkins Hosp.* **13**:155-161, 1902.
4. Edkins, J. S. Chemical mechanisms of gastric secretion. *J. Physiol.* **34**:133-144, 1906.
5. Connell, F. G. Partial gastrectomy in treatment of peptic ulcer. *Surgery* **3**:696-701, 1938.
6. Fremont-Smith, M., and McIver, M. A. Late results of surgical treatment of peptic ulcer based on study of 678 cases. *Am. J. M. Sc.* **177**:33-50, 1929.
7. Allen, A. W., and Welch, C. E. Subtotal gastrectomy for duodenal ulcer. *Ann. Surg.* **124**:688-707, 1946.
8. Dragstedt, L. R., and Owens, F. M., Jr. Supradiaphragmatic section of vagus nerves in treatment of duodenal ulcer. *Proc. Soc. Exper. Biol. & Med.* **53**:152-154, 1943.
9. Pavlov, I. P. *The Work of the Digestive Glands.* 196 pp. London: Charles Griffin, 1910. P. 53.
10. Moore, F. D. Resections of vagus nerves for ulcer; interim evaluation. I. Operative technique and hospital management. *Arch. Surg.* **55**:164-174, 1947. II. Clinical results. *Ann. Surg.* **126**:664-678, 1947.
11. Smithwick, R. H., and White, J. C. *The Autonomic Nervous System.* Second edition. 386 pp. New York: The Macmillan Company, 1944. P. 204.
12. Allen, A. W. Duodenal ulcer. *Ann. Roy. Coll. Surg. Eng.* **1**:235-247, 1947.
13. Weinberg, J., Kraus, A. R., Stempien, S. J., and Wilkins, F. B. Vagotomy in treatment of duodenal ulcer: results in three hundred and fifty consecutive cases. *Arch. Surg.* **62**:161-170, 1951.
14. Palumbo, L. T., Marquis, F. M., and Smith, A. N. Combined procedure of partial gastrectomy and infradiaphragmatic vagus resection. *Arch. Surg.* **62**:171-182, 1951.
15. Walters, W., Belding, H. H., and Lillie, W. I. Physiological and clinical studies of vagotomized patients: study of three hundred and thirty-one patients. *Arch. Surg.* **62**:183-205, 1951.
16. Colp, R., Klingenstein, P., Druckerman, L. J., and Weinstein, V. A. Comparative study of subtotal gastrectomy with and without vagotomy. *Ann. Surg.* **128**:470-478, 1948.
17. Smithwick, R. H., Farmer, D. C., Howe, C. W., and Porrell, W. A. Effect of various surgical procedures upon acidity of gastric contents of ulcer patients. Read before the American Surgical Association, Washington, D. C. April, 1951.

# A COMMUNITY HEART PROGRAM*

## Report of Three Years' Experience

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ONE year has passed since the last report on the Newton Heart Demonstration Program was presented to the Massachusetts Medical Society;[1] two years since the first official report appeared in the *New England Journal of Medicine*[2]; and three years since the program was initiated What have we learned in those three years about the community approach to the ever-growing problem of heart disease?

We have learned that medical knowledge of the prevention of rheumatic fever and subacute bacterial endocarditis can be applied in a practical way in a community. We have learned that several hospital services can be carried over into the community to help to delay the progress of heart disease and to prevent many unnecessary complications. Supplementary public-health services in the community have enabled the physicians of Newton to provide the same excellent medical care for cardiac patients in the home that they provide for their patients in the hospital.

The management of patients with heart disease is a long-range problem. It is a challenge to the physician to keep his patient a useful member of the community despite the handicap of his disease. It is of little value to save a youngster with acute rheumatic fever by giving ACTH if he is later allowed to develop a recurrence for want of prophylactic measures — or to save a patient in acute congestive failure only to have failure develop again through the patient's inability to follow a low-sodium diet.

From our experience, the real value of this type of program lies in its contribution to the management of the cardiac patient by the local physicians. Practical dividends are returned from services that can discover the unrecognized case of heart disease in the community and place the patient under medical care without planting unnecessary fears in his mind or in the minds of his family. Fear campaigns have been strictly avoided in all aspects of the program. Other important services are nutrition, community nursing, rehabilitation and services that help the physician to provide prophylactic measures against rheumatic fever and subacute bacterial endocarditis.

We have found that the public is not only willing but anxious to co-operate in such a program. The health agencies and industry needed little urging. In our experience physicians gave ample support as soon as they were convinced that the program was being planned and guided by a committee formed from their own ranks.

The staff of the Newton Health Department has actively participated in the development and practical application of the program. The Massachusetts Department of Public Health continues to give its support. Each step in the development of the program has been planned by the physicians on the Cardiac Program Committee and its subcommittees with members of the Public Health Service who have been assigned to the program. Under the leadership of Dr. Lewis C. Robbins, medical officer formerly in charge of the program, the foundations were firmly laid, and the present broadened program is largely the result of his foresight. During the past year he accepted a foreign-duty assignment, but the staff continues to emphasize the co-operative spirit so essential to the success of a Government venture in a local community.

This past year's experience has reinforced our opinion that the public-health aspects of heart disease can be dealt with and that public-health services can aid physicians in their management of heart problems in the community.

The actual work of the past year has indicated that some phases of the problem lend themselves more readily to a community approach than others; that some yield a greater return for effort and money invested; and that some services offered are more quickly used by the medical profession.

Among the more productive activities are *physician education*, *screening* for possible heart disease, *diet education* for both the cardiac patient and the overweight person, *rheumatic-fever prevention* and the *training of technicians* in making prothrombin-time and clotting-time determinations.

### POSTGRADUATE PHYSICIAN EDUCATION

The attendance at the monthly lectures of the Newton Postgraduate Heart Institute continues to be sizable. The leaders of these sessions stress the practical aspects of the management of the cardiac patient. Nearly half the time is spent in answering specific questions presented to the leaders in writing by those attending. Mimeographed summaries of each session are sent to every physician in the community. Attendance at these meetings has been approved for credit with the American Academy of General Practice.

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### Nutrition

One of the most satisfactory activities of the program has been aiding the physician in solving the dietary problems of the potential and actual heart patient.

A pilot study on group technic in weight reduction carried on by the nutritionist showed that the discussion-decision method was practical and effective. Eleven out of 12 patients with problem cases of obesity who were referred to the class by physicians lost from 10 to 40 pounds as a result of participating in twelve group meetings. A nine-month follow-up study shows that most of the group are still maintaining their lessened weight or are continuing to lose further, approaching their ideal weights. This group approach to weight reduction is now being continued for overweight persons with hypertension or heart disease who are referred to the class by their physicians. A trial class in weight guidance for overweight high-school students also has been initiated; if successful, this will be continued by the schools.

The problem of keeping a patient on a low-sodium diet can be most difficult. When the patient does stay on the diet, he is usually unhappy about it. The Subcommittee on Nutrition, under Dr. Arthur D. Baldwin, studied the problem of cardiac diets in Newton and saw the need for simplified and more standardized diet information. This led to the development of a booklet, "Planning Low Sodium Meals," by Miss Pearl A. Thoreson, nutritionist of the heart program, in co-operation with the nutrition services of Newton–Wellesley Hospital and the Newton Nutrition Center. Although published by the Newton Health Department and primarily for use in Newton, requests for over 13,000 copies have been received from 32 states so far. The booklet is available to the patient only through his physician. Using the booklet and its diet lists, the physician can select diets at three levels of sodium restriction — 200, 400 and 800 mg. of sodium — and at three caloric levels, depending on whether or not the patient requires weight reduction.

The booklet has simplified the problem of cardiac diets for physicians and patients alike. On physicians' orders, it is also used by dietitians for the instruction of patients prior to discharge from the hospital; nursing homes have adopted it; and nutritionists and nurses use it when making home visits.

The booklet has been an excellent teaching device, but the Subcommittee on Nutrition believed that patients who must follow such diets for the rest of their lives could be helped even further. For this reason, a group-education service for patients on low-sodium diets is being offered by nutritionists connected with the heart program, the hospital and the nutrition center. Through physician referral, patients may enroll for a series of four meetings to obtain information on such practical problems as making meals palatable, fitting the diet into regular family meals and selecting low-sodium meals in restaurants.

Both the physicians and patients have been well pleased with the heart program's nutrition services.

### Rheumatic-Fever Prevention

The rheumatic-fever prevention program, under Dr. Anton R. Fried, has made progress during the year. Knowledge of measures for prevention of rheumatic fever is available and, if properly applied, might well prevent much heart disease. After consultation with Drs. T. Duckett Jones, Benedict Massell and David Rutstein, a program was initiated, directed toward the prevention of recurrences of rheumatic fever in children by daily oral administration of penicillin and also by advocating immediate treatment of suspected streptococcal infections in members of families of patients with rheumatic fever. A prophylactic schedule of 100,000 units of penicillin taken orally three times a day was recommended for patients with a history of a first attack of rheumatic fever within the past five years. A dosage of 1,000,000 units of pencillin taken orally daily for ten days was recommended for the treatment of suspected streptococcal infections in members of rheumatic-fever families. To help the physician to confirm suspected streptococcal infections, free throat-culture studies were offered by Dr. David Skinner, director of laboratories at Newton–Wellesley Hospital. Penicillin at cost price was made available at the Newton Health Department to physicians for members of rheumatic-fever families. Through a school survey, about 350 Newton families were found to have a rheumatic-fever history. They were advised to see their physicians for special advice on the prevention of rheumatic-fever recurrences.

The physicians have responded well to this effort toward the prevention of rheumatic fever. Some 50 children with rheumatic fever are now receiving this special care through their physicians. This represents 80 per cent of patients known to have rheumatic fever in Newton with an attack within the past five years. Only 16 per cent of children with rheumatic fever were receiving special care when this program started a year ago. No recurrences of the disease have been reported in any of the children receiving penicillin; furthermore, no sensitivity or other untoward reactions to the drug have been noted.

To study the effects of penicillin on the throat flora, a throat-culture study was conducted in the Newton schools on a group of 36 of these children and 36 controls. The study showed that the children receiving penicillin orally had significantly fewer positive cultures for beta-hemolytic streptococci.

### Subacute Bacterial Endocarditis

Subacute bacterial endocarditis is considered a preventable form of heart disease. A joint committee of physicians and dentists, under Drs. Frank M. O'Connor and L. Charles Christopher, has drawn up recommendations for prevention of this condition in persons with valvular or congenital heart disease who undergo dental or surgical procedures. More recently, the recommendations of the American Heart Association on the prevention of subacute bacterial endocarditis have been incorporated into the original recommendations and are being sent to all physicians and dentists practicing in Newton. Although no cases of subacute bacterial endocarditis following dental or surgical procedures have occurred in Newton in the past year, the infrequency of this disease makes it difficult to determine whether or not the program contributed to this good record.

### Case Finding

Voluntary reporting of cases of heart disease, attempted early in the program, proved to be of little value and has been discontinued. It seemed more important to find persons with previously unknown heart disease or those with known heart disease who were not under medical supervision. This problem was given to the Subcommittee on Case Finding, under Dr. Walter O. Blanchard. It was thought that these patients could benefit from the supervision or advice of their physicians, if this could be obtained without creating unnecessary fears in the patient. The approach that has been used has minimized the possibility of creating cardiac neuroses and seems to be moderately successful in revealing previously unrecognized cases of heart disease. The procedure consists of a seven-question yes-no cardiac history; height, weight and blood-pressure recording; and auscultation of the heart. Over 5500 persons in Newton have been screened by this method to date. Preliminary follow-up study of the cases referred to physicians indicates that 3 to 4 per cent of those screened have heart disease or hypertension that was previously unknown. About an equal number of cases were previously known but not under medical supervision. The Newton Community Council's Heart Committee has been especially helpful in stimulating community participation without using fear campaigns.

No information is given to the subject concerning positive findings. It is emphasized to the public that the screening does not make a diagnosis but is an attempt to find those persons who would be most likely to benefit from further examination and advice from their own physicians. The report of findings is mailed to the subject's physician, who decides whether the findings warrant referral or not. We find that this referral system has protected physician-patient relations and has prevented many unnecessary referrals. This technic of case finding seems to be satisfactory, but further experience will be needed before it can be evaluated.

### Rehabilitation

Some action has been taken on the problem of rehabilitation for patients with heart disease, but much more needs to be done. The physician is the person responsible for determining the amount and type of work that his cardiac patient should do. A special lecture, emphasizing the need for careful evaluation of cardiac status and proper job placement, was given to local physicians by Dr. Howard B. Sprague. Some key persons, representing various agencies interested in rehabilitation, have met and exchanged information on locally available services for cardiac patients. The Massachusetts Division of Employment and local industries are co-operating in job placement for persons with heart disease. We hope that more can be done about this important problem in the future.

### Technical Aspects

The Technical Subcommittee, under the direction of Dr. David Skinner, pathologist and director of laboratories at Newton–Wellesley Hospital, has been working on the problem of prevention and treatment of thromboembolic conditions associated with myocardial infarction. The value of anticoagulants in the prevention of the thromboembolic conditions associated with heart disease is recognized, but the need for reliable laboratory control is continually stressed.[3] In July, 1950, a refresher course for technicians in prothrombin-time and clotting-time determinations was established on a co-operative basis with the Division of Cancer and Other Chronic Diseases of the Massachusetts Department of Public Health. A preliminary survey revealed that 77 hospital and clinical laboratories in the State were interested in such a course. Approximately 55 hospitals and laboratories in Massachusetts have sent technicians for this training. A laboratory manual, compiled for use in the course, has been published by the Newton Health Department, and a copy has been mailed to each laboratory in the State. The course is under the technical direction of Dr. Irving S. Wright, chairman of the Committee on Anticoagulants of the American Heart Association, and has been endorsed by the New England Pathological Society. The interest shown in this type of refresher training has stimulated other states to arrange similar refresher courses.

### Summary

The physicians, health agencies and citizens of Newton have been brought together during the past three years in a co-operative attempt to solve some of the problems of heart disease. Active participation of the physicians in planning the community program has resulted in the development of acceptable community services in case finding, prevention of

rheumatic fever and subacute bacterial endocarditis, nutrition services and other services that have contributed to the management of the patient with heart disease. All the major activities of the Newton Heart Program were among those later recommended for communities by the National Conference on Cardiovascular Diseases.[4]

The experience in these past three years has confirmed our belief that such co-operative efforts of private physicians, public-health agencies and the general public can create wholesome relations and help in solving some of the problems of heart disease.

### References


1. Kattwinkel, E. E., Morris, E. M., and Robbins, L. G. Progress report of Newton Heart Demonstration Program. *New Eng. J. Med.* **243**:115, 1950.
2. Kattwinkel, E. E., et al. Public-health heart program: first report. *New Eng. J. Med.* **241**:446-449, 1949.
3. Editorial. Anticoagulants as cause of hemorrhage. *J. A. M. A.* **144**: 1466, 1950.
4. Proceedings of the First National Conference on Cardiovascular Diseases. 259 pp. New York: American Heart Association in co-operation with the National Heart Institute, United States Public Health Service, 1950.


## COMMON PITFALLS IN THE X-RAY DIAGNOSIS OF TUBERCULOSIS


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With the increased emphasis on the x-ray film as a means of diagnosing pulmonary tuberculosis, less and less has appeared in current literature about possible diagnostic errors. In spite of the fact that by x-ray examination of the lungs alone it is possible to identify only 75 to 80 per cent of the lesions,[1] x-ray examination of the chest has become mandatory for food handlers and schoolteachers, and efforts are being made by public-health officers[2] to have premarital chest x-ray films taken as a routine procedure in much the same way as a premarital blood examination for syphilis is made.

If programs of this type are further broadened, this should be done only with full realization of the many errors that are possible when one relies either heavily or exclusively on the chest x-ray film as a means of diagnosing tuberculosis. Even annual repetition of such examinations may fail to detect active tuberculosis before symptoms develop; in at least one case a tuberculous infiltrate has appeared four months after a "negative" film.[4]

As illustrations of some of the different ways in which error is likely to occur, the following cases are cited. As will be noted, emphasis is laid on the fact that accurate appraisal of the patient's status is obtained only when a knowledge of the natural history of tuberculosis is combined with physical examination of the patient and bacteriologic investigation of the patient's sputum. X-ray examination of itself may not be enough.

### Case Reports

Case 1. H. A. T., a 37-year-old man, was inducted into military service in July, 1942, but had no chest film taken at that time. In October, 1945, a routine photofluorogram, taken at the Separation Center, revealed a "shadow" at the right apex. He was entirely symptom-free but was admitted to one naval hospital where he remained 3 weeks; he was then transferred to another hospital, where he remained from November 9, 1945, to January 8, 1947. During this entire period x-ray films were taken every 6 weeks, and many sputum tests were made (although patient denied raising sputum), which were negative. The sedimentation rate was always normal.

Physical examination on January 16, 1947, revealed a deep scar underlying and above the right clavicle, the residual of severe osteomyelitis at the age of 4. By careful positioning, it was possible to demonstrate that the scar above the clavicle was identical with the one seen radiologically. It is quite likely, therefore, that this patient was treated for 15 months for a disease that he did not have.

*Pitfall No. 1: Failure to correlate physical findings with x-ray examination can lead to serious error.* Before a patient is hospitalized for tuberculosis, the chest should be examined for scars, nevi and other artefacts that may cast a shadow on the x-ray film. In this case, the scar on the neck was misinterpreted as a "shadow" on the lung.

Case 2. Q. A., a 33-year-old man, had fatigue of 3 months' duration. He had lost 8 lb. in 3 weeks. He was referred by his family physician to a radiologist, who reported blunting of the right costophrenic angle and thickening of the pleura from apex to diaphragm. A diagnosis of pleural effusion was made, and the patient was treated by bed rest at home. From October 23, 1945, to November 23, 1945, the patient gained 12 lb., his fatigue disappeared and his cough and expectoration showed significant improvement. The sedimentation rate, which was 17 mm. per hour (Cutler) on October 19, 1945, was 10 mm. per hour on November 27, 1945.

In spite of this clinical improvement, the radiologist reported an increase of fluid in the right chest. The family physician could not explain the discrepancy between the patient's clinical status and the x-ray report. The x-ray films were therefore reviewed. It was found that the film made on October 19, 1945, was considerably more heavily exposed than that of November 23, 1945. Furthermore, the fact that the patient had gained weight also contributed to making the second film much less dense than the first. In this way an increased amount of fluid was simulated when it actually did not exist. On review of the films, the radiologist agreed that films of different density were inaccurately compared.

*Pitfall No. 2: Failure to compare films of similar densities often results in the illusion of a lesion's increasing or decreasing in size.* In cases of tuberculosis some patients are told that they are getting better (or worse) when the entire difference lies not in the


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patient but in the degree of exposure. Different films taken by different technicians and under different circumstances can result in significant error.

CASE 3. N. A. T., a 19-year-old girl, had been suffering from "asthma" for 3½ years. Skin tests performed elsewhere revealed her to be "allergic to everything," and she received injection treatments. Her father had active pulmonary tuberculosis and was a patient in a sanatorium during this period. Five months before her examination an x-ray of her chest (photofluorogram) by a mobile unit was interpreted as negative. Seven weeks prior to examination she had pains in her back and the left anterior chest, aggravated by breathing. For these she received her usual asthma injections and felt improved. However, an x-ray film taken at about that time revealed a density in the left upper lobe, and although the first four sputum examinations were negative the fifth revealed acid-fast organisms that were subsequently confirmed by culture. The patient was treated by bed rest at home, with complete recovery. On conservative home care her weight increased from 176 to 194 pounds. The lesion in her left upper lobe over a period of two years became dense and fibrotic. She has had no further attacks of "asthma" and has required no further treatment.

*Pitfall No. 3: Failure to place adequate emphasis on history.* This patient, whose contact with a tuberculous patient was well established, was treated as an "asthmatic" without multiple chest x-ray films, and when the patient developed pleuritic pain a photofluorogram was obtained. The results of this examination were regarded as equivalent to that obtained by larger diagnostic films, which introduces another source of error. If a patient with a strong family history of tuberculosis has suspicious symptoms, x-ray films of good diagnostic quality must be taken often.

CASE 4. C. E. D., a 44-year-old man, was involved in a minor automobile accident in 1944. At that time his shoulder was injured, and an x-ray film of the shoulder was taken. By accident a portion of the chest appeared on the shoulder film, and suspicious markings were discovered. The patient was given this information by his physician, but since he had no striking symptoms at that time he was told that it must be "old healed scars."

The patient was symptom-free, but since his wife had a cold in July, 1946, he accompanied her to an x-ray clinic and while there had a chest film taken. Bilateral pulmonary tuberculosis was discovered, and the patient was admitted to a sanatorium on September 30, 1946.

*Pitfall No. 4: Reliance on an inadequate x-ray examination.* The fact that this patient's shoulder film revealed pulmonary disease should have been a signal for a thorough investigation of the patient's lungs. It is impossible to classify tuberculosis as "arrested" or "old" under the circumstances described above. The term "arrested" signifies that the patient has been under six months' observation, that he has had adequate chest x-ray examination during this period of time, that the sputum is negative and that he is clinically well. These criteria were not observed in this case. The patient was not followed for two years from the time the disease could have been discovered until the actual time of its discovery.

CASE 5. M. B., a 30-year-old woman, was found to have tuberculosis in December, 1944, while she was a cadet nurse. In accordance with the Workmen's Compensation Act she appeared before the Industrial Accident Board on July 11, 1950, but since no definite decision concerning liability could be reached at that time the case was referred to an impartial radiologist for appraisal. The radiologist took chest films of the patient in his own office in September, 1950, and compared these with films taken in 1947 and early 1948 at the hospital in which the patient trained. On the basis of this comparison he concluded that the patient had "arrested tuberculosis."

The radiologist, however, did not avail himself of any of the films taken by the patient's private physician during the latter part of 1948, 1949 and 1950. He did not obtain any clinical history. Had he done so, he presumably would not have committed himself to a diagnosis of *arrested* disease. The fact was that during 1949 the patient had many positive sputum tests, and as late as March, 1950, her sputum was still positive. The films taken during 1949 and 1950 showed considerable accentuation of the patient's tuberculosis in the right lung field, with accompanying pleural reaction. By September, 1950, the process had quieted down; hence the films made at that time were quite similar to the one taken in 1948 that had been reviewed by the radiologist.

*Pitfall No. 5: Comparison of x-rays too far apart in time may lead to erroneous conclusions.* In this case an error was committed by an outstanding radiologist. Had he availed himself of x-rays taken at more frequent intervals, this error would not have been made. It is possible, over a period of two years, for tuberculosis to become active, accompanied by a positive sputum, only to have it recede, so that the disease appears "arrested." Even cavities have been seen to "open and close" on films taken at monthly or bimonthly intervals. If films taken six months or more apart are evaluated, great caution must be exerted in the interpretation of "arrested" disease.

CASE 6. M. T. M., a 41-year-old woman, was discharged from the sanatorium on December 18, 1944, because of arrested tuberculosis. X-ray films revealed thickening at both apices; no cavities could be seen. Her sedimentation rate was normal, her clinical condition was good and her sputum was negative. On October 19, 1949, she fell down a flight of stairs, landing on her chest. She received no serious injury, and when she reported for her routine checkup on November 27, 1949, her chest film was identical with those obtained over the previous 2½ years. However, a sputum specimen was positive. Although the routine posteroanterior film made on November 27, 1949, showed no change as compared with the previous examinations, a lordotic film revealed a cavity 1.2 cm. in diameter at the left apex. The sputum has since been consistently positive. The cavity appears slightly smaller.

*Pitfall No. 6: Reliance on posteroanterior films without special spot examinations may be extremely misleading.* In this case, the patient's posteroanterior films had shown no change over a period of five years in spite of the facts that during the past eighteen months a cavity has opened in the left upper lobe and that the patient has a positive sputum. If this patient had been followed only by periodic posteroanterior films, the infectiousness of her disease and the change in her condition would never have been discovered.

CASE 7. K. T. M., a 53-year-old woman, had a one-stage right thoracoplasty in May, 1942, and was discharged from the sanatorium on July 31, 1942. She returned to work in April, 1943, and had repeated x-ray examinations. Her sedimentation rate was normal. A film of her lung revealed a one-stage thoracoplasty on the right from the second to the

sixth rib. The lung was inadequately collapsed. The patient's general health was good, however, and she denied respiratory symptoms until September 20, 1950, when she complained of a "cold" with cough and expectoration of 1 week's duration. X-ray examination at this time, including lordotic films, revealed no change when compared with films previously taken.

On September 23, 1950, she was started on Chloromycetin. Almost immediately her symptoms subsided and her temperature returned to normal. Sputum studies for tuberculosis were reported positive for the first time on September 25, 1950, and have been intermittently positive since then. Repeated x-ray films have revealed no change.

*Pitfall No. 7: Sputum examinations must be made even when the x-ray films show no change and even when special films reveal no evidence of further disease.* Had sputum evaluation not been made in this patient, it might logically have been concluded that she had a primary atypical pneumonia, since it responded so dramatically to Chloromycetin. In any patient who has had pulmonary tuberculosis, any flare-up of respiratory disease should be regarded as probably tuberculous in its origin until proved otherwise.

Case 8. W. G. C., a 27-year-old veteran, had had several bouts of pleurisy and bronchitis while in military service. On discharge from the Navy in 1946 an x-ray film of his chest was said to be negative. In May, 1949, he developed a "chest cold" with cough and expectoration. On June 16, 1949, examination revealed dullness and rales at the left base posteriorly. X-ray films revealed hazy mottling throughout the left base consistent with pneumonia. On the next evening he had a hemoptysis that necessitated his hospitalization. Sputum cultures were now repeatedly positive for tubercle bacilli. The patient was admitted to a Veterans Administration Hospital, where he received pneumoperitoneum and streptomycin with excellent results.

*Pitfall No. 8: Basal disease may be tuberculous, particularly if it occurs in the young adult with a history of pleurisy within five years prior to the "pneumonia."* Any young adult with an atypical history of pneumonia should have sputum examination for tubercle bacilli prior to final diagnosis of pneumonia.

Case 9. J. DeP., a 29-year-old woman, was hospitalized in September, 1947, because of a left pleural effusion. Aspirated pleural fluid failed to reveal tubercle bacilli. After this, the patient had a psychotic episode and was admitted to a mental hospital, where she received 10 electric-shock treatments, with excellent recovery. Shortly before her discharge in 1948, right pleural fluid was discovered and a right thoracentesis was performed. The pleural fluid was again found to be negative. The patient was discharged from the mental hospital in May, 1948. Physical examination revealed dullness and diminished breath sounds on both sides of the chest. The sedimentation rate was 20 mm. per hour (Cutler). X-ray examination showed thickened pleura on the left side and a small amount of pleural fluid on the right. She was followed periodically and her condition seemed to improve. Sputum specimens remained negative.

Because of the pleural effusions it was thought that she should be kept under close surveillance; she was therefore asked to return every two months for checkup. However, the patient felt so well during the latter part of 1949 and early 1950 that she did not return for 11 months. At the end of that time, on July 28, 1950, a routine x-ray film was taken that revealed two small cavities in the right upper lobe. The sedimentation rate was 20 mm. per hour. A single positive sputum report was obtained out of many tests. Additional films were made on August 28 and October 9, 1950, at which times the right-upper-lobe cavities appeared closed and the blood sedimentation rate was only 12 mm. per hour.

*Pitfall No. 9: Pleurisy with effusion in a young adult is often a forerunner of pulmonary tuberculosis. Patients with pleural effusions should not be dismissed from observation for at least five years after their effusion.* X-ray films should be taken at intervals of two or three months during the period of observation. In this case prompt discovery of an active process and prompt treatment resulted in rapid recovery.

Case 10. J. C., a 50-year-old man, had cough and expectoration in 1939. A chest film made at an osteopathic hospital at that time was interpreted as follows: "X-ray film of the chest shows a thorax of the sthenic type. The aorta shows rather marked sclerosis for the age. The heart is not remarkable. The diaphragm domes are even. The costophrenic sinuses are clear. The hilum shadows are markedly increased in area and density, especially on the right side. The left apex is normal. The right apex shows much scar tissue and many cavities; it cannot be ascertained from this film whether the process is active or not, but activity is strongly suspicious in that there is cloudiness as well as cavitation and scar tissue formation. The trachea is in the midline. Impression: Old healed tuberculosis of the caseous type. Strong suspicion of activity."

On the basis of this x-ray report, the patient's osteopathic physician reassured him that he simply had "scars" in his lungs. One sputum test was obtained; it was negative. The patient continued to work until January 7, 1951, when he had a moderate hemoptysis. During the intervening years he had had constant cough and expectoration, and during the latter part of 1950 he had lost more than 15 lb. A chest x-ray film on February 1, 1951, disclosed advanced active bilateral tuberculosis. Sputum culture was positive. Bed rest was prescribed.

*Pitfall No. 10: X-ray films are worthless if they are not interpreted by competent physicians.* The phrase "old healed tuberculosis of the caseous type" is meaningless nonsense. It should have been recognized as such.

## Summary and Conclusions

Clinical appraisal and bacteriologic investigation are as important as x-ray examination in the diagnosis of pulmonary tuberculosis. To avoid error, x-ray examinations should be closely correlated with physical findings, with the history of the patient and with knowledge of the natural history of the tuberculous process. X-ray films should be of good diagnostic quality, should include special views when indicated and should be repeated at frequent intervals for purposes of comparison. In this way pitfalls in interpretation will be avoided.

1159 Hancock Street

## References

1. Sosman, M. C. Specificity and reliability of roentgenographic diagnosis. *New Eng. J. Med.* **242**:849-855, 1950.
2. *Acts and Resolves Passed by the General Court of Massachusetts in the Year 1950.* Chapter 732. P. 606.
3. Craster, C. V. Why not x-ray before marriage? *J. Med. Soc. New Jersey* **47**:395, 1950.
4. Slattery, R. V., Beadenkopf, W. G., and Loosli, C. G. Nature of lesions encountered in routine chest x-rays. *J. Lab. & Clin. Med.* **36**:617-631, 1950.

# BOSTON MEDICAL LIBRARY

## Report of the Librarian*

THE Librarian herewith presents his annual report to the Boston Medical Library, the thirteenth accounting of the state of the Library since he took office in 1938. This report covers the calendar year 1950, a year of increase in the use of the Library to a point where the circulation and use of our books and periodicals reached nearly 65,000 items. This is the greatest use of the Library in its history, and when considered in relation to the growth during 1948 and 1949 it is noteworthy that in the three-year period the use of the Library has grown from 42,638 to 64,256. Thus the addition of the Massachusetts Medical Society members in January, 1948, has led to an increase in the use of the Library of over 50 per cent. Such a large increase was not anticipated in the fall of 1947, when a decision was made providing for members of the Massachusetts Medical Society. The growth has been much larger than anticipated and has brought with it many problems. If such a tendency continues it is unlikely that the Library will be able to give adequate service without increased financial help — and certainly not without an expansion of its personnel. The Library is still giving the same service as it did in 1947 — and doing much more work for its readers. This has been accomplished without increasing the number of persons employed.

The increase in circulation and use was accompanied by an 8 per cent rise in attendance, nearly 14,000 persons having used the Library building in 1950. There was a small increase in the interlibrary loans to nonmembers, so it may be assumed that the greatest use of the Library was by the fellows, members and students and by the general public. The Library itself, moreover, grew in size at about the rate established a number of years ago. About 3000 books and 2200 pamphlets were added. The Library now contains 212,824 volumes and 153,085 pamphlets.

### Accessions

The accessions to the Library in 1950 covered the usual main categories of periodical literature, current monographs and standard texts, the classical literature, rare books in the general field of medicine and Americana, including printed books and manuscripts, particularly related to New England. About 1000 current medical periodicals are now received. More than 325 new books and monographs were acquired through the courtesy of the *New England Journal of Medicine*. Others were purchased to keep us abreast of the times. The additions in classical textbooks and rare books were considerable — none quite so spectacular as our Servetus purchases of 1949, but nevertheless a goodly company. A few of these deserve special mention.

*Manuscripts*

A fourteenth-century *Collectanea Medica*, written in North Italy in Italian and Latin, a century before the days of printing, consists of notes and treatises mainly derived from lectures at the medical schools of Pavia and Bologna. It is a composite book, written in many hands, containing the works of Marsilius de Sancta Sophia, Gentilis de Fulgineo, Dinus de Garbo and others. The book was purchased in 1437 by Sigismondo Polcastro (c. 1379-1473), who taught philosophy and medicine at Padua for half a century, the transaction being witnessed by none other than Michele Savonarola. Manuscripts in 1437 were rare, valuable and costly; even a professor had to buy them and witness their change of hands. Savonarola, a contemporary of about the same age, also taught at Padua. The Library is rich in books by Savonarola but has neither of the incunabula editions of Polcastro's only book. The second edition is in the Army Medical Library, and another is in the Yale Medical Library (Harvey Cushing Collection).

Manuscripts of medical books, moreover, did not go out of fashion even after printing was inaugurated. The Library acquired a copy, in Italian, of the peste tract of Antonio Cermisone, written in 1522. The original was printed in 1475, the only copy known being already in the Library. The book was condensed into a "Recette," or prescription against the plague, in 1480, with a second edition in 1483. The Library has the latter, also a rare book. Another issue was printed at Milan in 1514. Because of its scarcity, even in the sixteenth century, a manuscript copy was needed in 1522, probably a plague year. The manuscript, now in our hands, is unusually well preserved and clearly written (Fig. 1).

*Incunabula*

Eleven books printed before 1501 were accessioned, including Volume 4, Part 1, of the Aldus edition of Aristotle's *Opera*, two volumes by Bartholomaeus Benevolentius, the *Cyrurgia parva* of Guy de Chauliac and the *Prognosticon in annum 1475* by Francesco Guascono, an edition thought by Arnold C. Klebs to be non-extant. Of the five printings of this book in various editions, Klebs found single copies of only three. These were all recorded as in Seville. Our edition, the third, ap-

*Presented at the annual meeting of the Boston Medical Library, May 21, 1950.

pears to be the only copy known. It is a splendid example, uncut, with wide margins (Fig. 2). All were annual predictions, the earliest known in print. The first was issued in 1470.

*Sixteenth-Century Books*

Over 150 books printed before 1700 were added. This group, now separated on our shelves, is rapidly expanding; its segregation has allowed for a complete reorganization. Of those acquired, a few call for special mention. Arnold of Villanova, a famous Catalan medical practitioner, was frequently consulted in the thirteenth century by kings and popes. In 1285 he was called to Barcelona to attend Peter III of Aragon in his last illness. Peter gave him a castle in Tarragona, and Arnold went to Montpellier, then under the jurisdiction of Aragon, to teach in its famous medical school. Here he presumably wrote a small book for popular consumption, containing essays by himself and other physicians, on the treatment of disease, a *Thesaurus pauperum*, as it was called, or *Le Trésor des Pouvres*. It is thought that it was not printed in the fifteenth century, but a French translation from the Latin was printed in Paris, undated, at the beginning of the sixteenth century, according to Brunet. The first dated Paris edition is marked 1517. The Library acquired a Lyon edition of 1512 in French, not recorded by Brunet but housed in the British Museum Library. It is a lovely book, with a woodcut on the title page showing the author presenting his book to a dignitary, perhaps a successor to Peter III of Aragon (Fig. 3).

Of interest, too, is a manuscript narrating a medicolegal problem concerning a surgeon called in to treat a wounded man. A member of the famous Barberini family injured a man in the throat, head and abdomen. Treated by Bernardinus del Caula, a surgeon, the skull fracture and throat wound healed rapidly; the abdominal injury made satisfactory progress. Three weeks later malignant fever

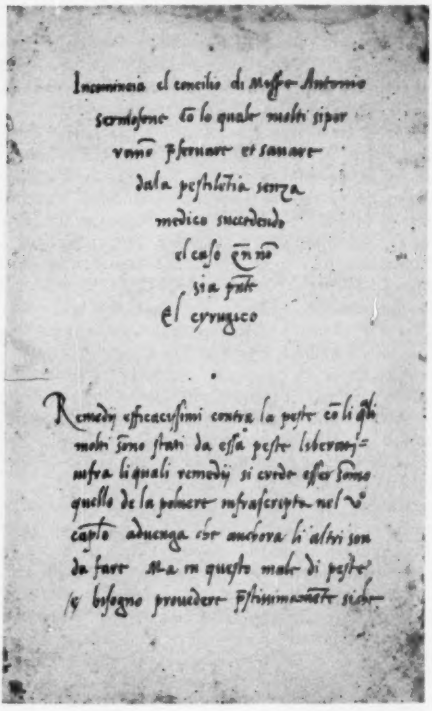

FIGURE 1. *Antonio Cermisonus: A Manuscript of* De la Pestilentia (*Italy, 1522*).

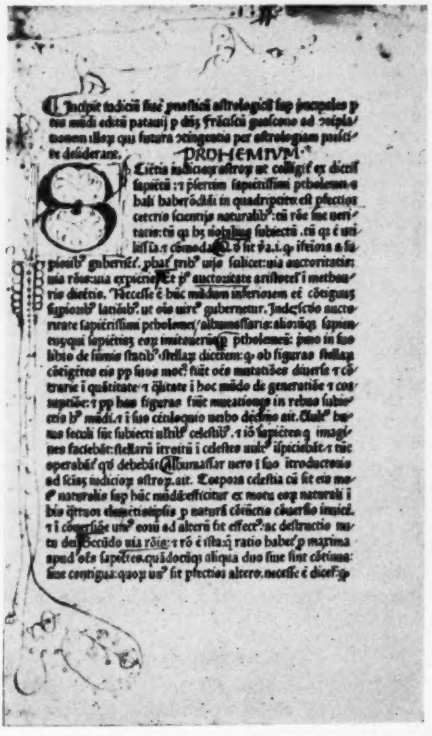

FIGURE 2. *Francesco Guascono:* Prognosticon in annum 1475 (*Venice, 1474*).

occurred and the patient died in seventy-nine days. Did he die of the after-effects of the abdominal wound? Damianus del Garbo, a physician, was called in consultation and wrote the account now before us. He found that death could not have been caused by the injuries received. "Nor can the said fever," he went on to say, "which attacked him after 21 days be brought into relation to these wounds . . .these wounds were already healed and far above suspicion." Damianus del Garbo was, in all probability, a member of the fourteenth-century Florentine medical family. Bruno del Garbo, a Bolognese surgeon, friend of William of Saliceto, was the father of Dino del Garbo and grandfather of Tommaso del Garbo, all well known in Florentine medicine.

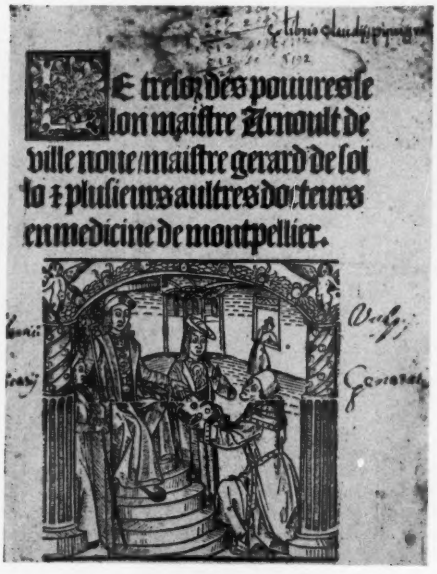
E trelor des pouures le
lon maistre Arnoult de
ville noue maistre gerard de sol
lo z plusieurs aultres docteurs
en medicine de montpellier.

FIGURE 3. *Arnoult de Villanova:* Trésor des Pouvres (*Lyon, 1512*).

Tommaso wrote a famous work on the plague after the great epidemic of 1348. The manuscript by Damianus, of course, favored the accused Barberini, who was held in prison at the time on a charge of homicide. What effect it had on the trial is not known, but as a document it contains much of interest concerning medical practice of the time and stresses the importance of the time factor in medicolegal inquiry.

The Library has long been interested in Marsilio Ficino (1433–1499), the philosophaster, whose mystical bent led him into the occult sciences and philosophy. His father was physician to Cosimo de' Medici, and his son, brought up in a princely atmosphere, was well versed in Platonic disputation, so dear to the heart of his patron. One of the tasks undertaken by Marsilio was to translate Plato from Greek to Latin. The book, published in 1482, is in the Library. It has been called "a mass of ill-digested erudition," but the whole of antiquity seemed precious in Marsilio's eyes, and nothing was to be missed. Ficino, mixing his philosophy with

FIGURE 4. *Marsilius Ficinus:* Das Buoch des Lebens (*Strassburg, 1521*).

astrology, was accused of magic and was barely saved from death by some of his friends. In spite of his deviations, Ficino remained a Christian, with St. Augustine as his model. He lived near Florence and was on friendly terms with all the scholars of his time. Not a physician, he took orders and received a canonry. Much beloved, he was a leader in the "golden" school of humanism in the last half of the fifteenth century, when Florence was its center. His influence on medicine was considerable, through his interest in astrology and through his translations, some into Italian or German. His tract against the plague, written for popular consumption, is in Italian. The Library has long owned a copy, along with 8 other works of Ficino published before 1501 and 16 books published after the author's death. The latest addition is an illustrated volume in German issued in Strassburg by an energetic printer, Johann Grüninger, well known for his incunabula editions of Hieronymus Brunschwig. Some of the illustrations in the Ficino book are from Grüninger's earlier works. The book, put into German from the Latin, was no doubt picked up from a manuscript. Of interest is the picture on the cover (Fig. 4). Here Ficino sits in a chair, lecturing with

authority, in contrast to Arnold de Villanova, who on bended knee is presenting his book to his patron. Strassburg under German influence in 1521 was possibly less subservient than Lyon in 1512. The book of Ficino, in the vernacular, was a teaching text, directed to physicians. Arnold's book was addressed to the poor and may have well required ecclesiastical or authoritative sanction to ensure its success.

A collection of papers on syphilis was printed in Basel and in Lyon in 1536, containing the work

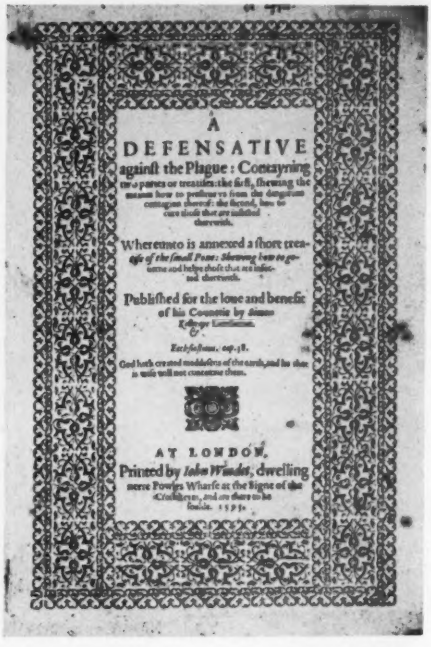
A
DEFENSATIVE
against the Plague: Conteyning
AT LONDON,
Printed by *Iohn Windet*, dwelling

FIGURE 5. *Simon Kellwaye:* A Defensative against the Plague (*London, 1593*).

of Petrus Matthaeolus, Johann Almenar, Nicolaus Massa, Nicolaus Poll, Benedictus de Victorius and Angelus Bologninus. The Library has acquired the Basel imprint.

*English Imprints*

Eight books in this classification were accessioned during the year. These included *A profitable and necessarie booke of observations* by the famous surgeon William Clowes — the third edition (1637), in two parts, one on burning by the flame of gunpowder and the other on the treatment of syphilis. Both conditions were common in soldiers in Clowes' time.

Also added were *A defensative against the plague* by Simon Kellwaye, 1593, and *Cornelius Shilander, his Chirurgerie*, 1596. Kellwaye's book is rarely found. It deals with the treatment of both plague and smallpox, the two diseases being fairly well differentiated early in the sixteenth century (Fig. 5). Kellwaye, not a physician, lived in Kingsmill, Devonshire, a sparsely settled area. He wrote the book because treatment for plague was often urgently needed and a "good physician is not to be gotten in every place." It contains many prescriptions and is a good example of Elizabethan medical literature.

Even rarer is Shilander's *Chirurgerie*, only two other copies being recorded, both in London (Fig.

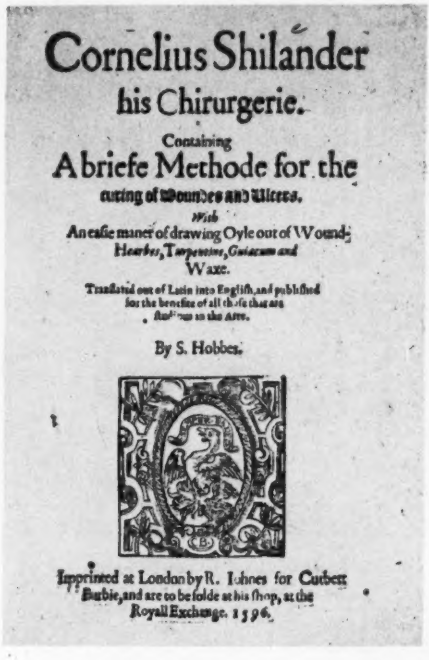
Cornelius Shilander
his Chirurgerie.
Containing
A briefe Methode for the
curing of Wounds and Ulcers.
With
An easie maner of drawing Oyle out of Wound-
Herbes, Turpentine, Guiacum and
Waxe.
By S. Hobbes.
Imprinted at London by R. Johnes for Cuthert
Burbie, and are to be solde at his shop, at the
Royall Exchange. 1596.

FIGURE 6. Cornelius Shilander, his Chirurgerie (*London, 1596*).

6). It is translated from the Latin text of Cornelius Schylander, whose book, illustrated, was published in Antwerp in 1577. He was a Dutch surgeon who lived in the fifteenth century in Antwerp. The Latin text is also in the Library. The book is written in the form of a dialogue between a physician and a surgeon.

*Spanish Imprints*

Thirteen books printed in Spain or written by Spanish authors and printed outside the country were added. Of most importance to us was the Seville 1517 edition of Ketham's *Medicina*. This, the first illustrated medical book, is found in the Library in all four Latin editions, printed before 1501, and a Venice edition of 1513. The Spanish edition contains a plague tract by Velascus de Taranta.

*Americana*

Notable additions were: a medical letter by William Avery, Dedham, 1663; a manuscript of 242 pages, being the journal of George E. Stubbs for 1864, written in the General Field Hospital, Chattanooga, Tennessee; the matriculation and lecture cards of Albert H. Varney at the Harvard Medical School, 1854–1856, and his cards to the Massachusetts General Hospital for the same years (Varney then studied at North Berwick, Maine, Melrose, Massachusetts, and North Parsonfield, New Hampshire, as certified by his teachers); and letters from Charles W. Eliot and from Henry I. Bowditch concerning the application of Edith C. Varney for entrance into the Harvard Medical School in September, 1890 (she was refused admission and later graduated from Boston University School of Medicine).

*Special Gifts*

As customary, the Library received many gifts during the year. Fellows such as John Adams, James B. Ayer, Benjamin Castleman, David Cheever, Edmund W. Clap, George O. Clark, James C. Janney, E. B. Lane, Timothy Leary, Sidney Licht, Samuel Lowis, Donald Munro, William C. Quinby, Irving Walker and others gave books, periodicals, pictures and other items of medical interest. Many duplicate sets were used for exchange or replacements. Schools, hospitals and laymen also contributed. Outstanding were: the theses from the Harvard Medical School; the Record Book of the Middlesex Medical Association (1788–1798, 1813–1816), the gift of Mrs. G. J. Jackson; privately printed books from Chauncey D. Leake; the surgical instruments of Dr. Henry N. Jones of Kingston, Massachusetts (about 1800) from Mrs. Emily H. Marvin; Jacob Holler's *De compositione medicamentorum*, Paris, 1571, from the New York Academy of Medicine; and Dr. David Townsend's books on tuberculosis, from Mrs. Townsend.

Bequests of $1000 from the estate of Nellie W. Cowles and $5000 from the estate of Mary Fifield King were received. Gifts of money were also contributed by David Cheever, Mr. Meyer H. Goldman, Mrs. Evelyn S. Nott, Dr. Fritz B. Talbot and the Suffolk District Medical Society.

*Periodicals*

A number of important medical journals were established in 1950. In diseases of the heart and circulation three may be mentioned: *Circulation: The Journal of the American Heart Association*, an outstanding publication with two large volumes a year; *Angiology: The Journal of Vascular Diseases*, published under the auspices of the Angiology Research Foundation; and, from Mexico, the *Revista de la Sociedad Interamericana de Cardiologia*, an abstract journal issued in parallel columns in Spanish and English. In nervous diseases: *Acta neurovegetativa*, an international journal devoted to contributions from researches on the vegetative nervous system, growing out of the International Congress of Practical Psychology held in Traunkirchen, Austria, in July, 1949; and, from Buenos Aires, *Neuropsiquiatria*, the first number coming out in November, 1949. In other fields: *Acta physiologica et pharmacologica Neerlandica*, sponsored by the Holland Society of Sciences, a successor to the *Archives Néerlandaises de Physiologie* and the *Acta brevia Neerlandica*. The journal is trilingual, with summaries in English, French or German; the *Japanese Journal of Physiology*, a quarterly, succeeding the old *Japanese Journal of Medical Science*, founded in 1930 and discontinued in 1945. The present publication is edited for the Physiological Society of Japan by Yas Kuno, of the University of Nagoya (the articles, of a high value, are published in English); the *International Archives of Allergy and Applied Immunology*, the official organ of the International Association of Allergists, published in Switzerland, in English, the first number stressing psychosomatic and neurologic allergy; *Experimental Cell Research*, published under the auspices of the International Society for Cell Biology; *Omnia Therapeutica*, in Italian, covering the wide field of therapeutics, including roentgen therapy and a quarterly review of new drugs; *Fertility and Sterility*, the official organ of the American Society for the Study of Sterility, a splendid publication, possibly of restricted circulation in some geographical areas; the *South African Journal of Clinical Science; Centaurus*, an international magazine of the history of science and medicine, issued from the University Library at Copenhagen; and the *Archives of Industrial Hygiene and Occupational Medicine*.

*Addresses and Meetings*

The year was an unusual one for the Library in relation to the entertainment of visitors and the celebration of the seventy-fifth anniversary of the Library itself. The American Association of the History of Medicine, of which the Librarian was president, held its twenty-third annual meeting May 21–23 in the Library building. A centenary celebration was held in honor of William Henry Welch (1850–1934). On the second day Professor

Roland H. Bainton of Yale University gave the Garrison Lecture on Michael Servetus; the group visited the Ether Dome at the Massachusetts General Hospital, the grave of Zabdiel Boylston in Brookline, where the Librarian made some remarks, and the Faculty Room of Harvard Medical School, where they were welcomed by Reginald Fitz. At the annual dinner Professor George Sarton of Harvard University spoke on Robert Boyle, "the sceptical chymist."

The second meeting in 1950 was the forty-ninth annual meeting of the Medical Library Association, an organization long supported by the Library. It had met here in 1938, when Mr. Ballard was president, and now returned for its largest meeting. On June 20 the presidential address was given by Sanford V. Larkey of Baltimore, and Mr. William J. Bishop, librarian of the Wellcome Historical Medical Library of London, was an honored guest and principal speaker. Dr. Merrill Moore, physician and poet, addressed the dinner audience. Mr. Ballard arranged the program and entertainment and Mr. Colby was responsible for local arrangements. The Library was greatly honored by the large and enthusiastic group in attendance.

The Library noted its seventy-fifth anniversary by holding a dinner at the Hotel Kenmore on October 18 and an exhibit at the Boston Public Library from October 16 to December 15. At the dinner the Librarian spoke of the history of the Library, particularly in regard to the first Boston Medical Library in 1805, John Fleet, the librarian of the Massachusetts Medical Society from 1800 to 1813, Henry I. Bowditch, O. W. Holmes and James R. Chadwick and their reorganization of the Library as we know it today. Chauncey D. Leake, Ph.D., dean and executive vice-president in charge of the medical program of the University of Texas, gave a brilliant talk on "Science, Medicine and Philosophy." Among the guests were Dr. Hugh Clegg, editor of the *British Medical Journal*, and many representatives of libraries in Greater Boston.

Also in October, 1950, the Librarian gave the Walter Channing Lecture in connection with a meeting of the Boston Lying-in Hospital.

*Book Reviews*

Three hundred and twenty-seven new books, monographs, new editions, textbooks and others, received from the *New England Journal of Medicine*, were reviewed by Fellows of the Library, with many of the shorter notes contributed by Mr. Ballard.

*Exhibitions*

At Christmas time the Library showed three colorful prints: the St. Minus broadside, printed from the woodblock of 1495; another broadside of St. Sebastian and St. Rochus, patron saints of the plague, 1473; and the title page of *Das Buch der Croniken und Geschichten*, Nuremberg, 1493.

Other exhibits were on Sir William Osler; Edward C. Kendall and Philip S. Hench, Nobel-Prize winners; a manuscript of 1450 and printed books of 1484 by Jacobus de Forlivio, illustrating the transition from written to printed text; and the anniversary exhibit of the Library, featuring material relating to the first and second Boston Medical Libraries.

Recent articles emanating from the Library are as follows:

*Seventy-Fourth Annual Report of the Boston Medical Library for the Year 1950.* Boston: privately printed, 1950.

Phippen, W. G. Boston Medical Library. Report of the president. *New Eng. J. Med.* **242**: 598, 1950.

Viets, Henry R. Boston Medical Library. Report of the librarian. *New Eng. J. Med.* **242**: 936–942, 1950.

*Idem.* Zabdiel Boylston (1679–1766). Remarks at his grave. *Bull. Hist. Med.* **24**:539-540, 1950.

*Idem.* On visiting a bookseller. *California Librarian* **12**:66, 1950.
Also: *Antiquarian Bookman* **6**:850, 1950.

*Idem.* Remarks at annual meeting, Medical Library Association. *Bull. Med. Lib. Assoc.* **38**:313-315, 1950.

*Idem.* Boston Medical Library. Notes. William Avery (1622–1686); Middlesex Medical Association; Thacher's *American Revolution. New Eng. J. Med.* **243**:760, 1015, 320, 1950.

Ballard, James F. Boston Medical Library. Notes. Classification: Evolution of the printed book; *Excerpta Medica;* Wassermann Collection. *New Eng. J. Med.* **242**:725, 524, 884, 920, 1950.

*Idem.* Editorials. The Shattuck Report. Medical Library Association. *New Eng. J. Med.* **242**: 723-724, 918, 1950.

*Idem.* Ideal bookseller's catalog. *Antiquarian Bookman* **6**:1352, 1950.

*Idem.* Boston Medical Library. Notes. Award to the director; the Carsten Collection; Recent imported accessions; *Centaurus* and *Libri;* Exhibit at the Boston Public Library; Historical collections; Spanish books; Nobel-Prize exhibits. *New Eng. J. Med.* **243**:63-64, 168, 392-393, 547, 627-628; 719-720; 840, 895, 1950.

VARIA

A few notes are added, as has been the custom in the past, on books of historical or cultural interest.

Outstanding was *The Life and Times of Gaspare Tagliacozzi, Surgeon of Bologna, 1545–1599, with a Documented Study of the Scientific and Cultural Life of Bologna in the Sixteenth Century*, by Martha T. Gnudi and Jerome P. Webster (New York, 1950). Webster, a New York plastic surgeon, and Martha

Gnudi, an archivist, have collaborated on a full account of Tagliacozzi and his times, and there has resulted an ideal report of the man, his school, his friends and his work. Finely printed in Italy, the book contains a wealth of illustrations, reproductions of the original plates in Tagliacozzi's *De Curtorum Chirurgia* (1597), the Alexander Read translation of Book II and over 100 documents relating to the author printed in their original language and in English. Twenty years of work have brought rich rewards and acclamations to the joint authors of this complete and admirably accurate study.

Splendid, too, were *Francis Bacon: A Bibliography of his Works and of Baconiana to the Year 1750*, by R. W. Gibson (Oxford, 1950); *The Illustrations from the Works of Andreas Vesalius of Brussels, with Annotations and Translations, a Discussion of the Plates and Their Background, Authorship and Influence, and a Biographical Sketch of Vesalius*, by J. B. deC. M. Saunders and Charles D. O'Malley (Cleveland and New York, 1950); *Fifty Years of Medicine: A Symposium from the* British Medical Journal (London, 1950); the revised edition of Charles Singer's *A History of Biology: A General Introduction to the Study of Living Things* (London, 1950); a new and revised edition of *Rest and Pain*, by John Hilton (London, 1950), first published in 1863 and a classic of medicine, which should be read, as noted by W. Jones, "by every medical student once at least during his study of anatomy, once again during his practical work in the wards, and afterwards as often as possible during his career as a medical practitioner"; *The Medical Works of Hippocrates: A New Translation from the Original Greek Made Especially for English Readers*, by John Chadwick and W. N. Mann (Oxford, 1950); *A History of the English People*, by R. J. Mitchell and M. D. R. Leys (New York, 1950), containing excellent sections on "Rules of Health" in medieval England and "Medicine and Hygiene" in Tudor–Stuart times; *A History of the Teaching of Anatomy in Oxford*, by H. M. Sinclair and A. H. T. Robb-Smith (Oxford, 1950), with a chronologic table of anatomic teachers, a bibliography and a catalogue of the exhibit displayed at the Radcliffe Science Library; and *The Printed Book of the Renaissance: Three Lectures on Type, Illustration and Ornament*, by E. P. Goldschmidt (Cambridge, 1950), a well known London bookseller.

In autobiography, *Happy Toil: Fifty-five Years of Tropical Medicine*, by Sir Leonard Rogers (London, 1950), describes a productive life devoted to medicine in India; in *An Autobiography* Sir Arthur Keith (London, 1950) brings to life his long and memorable career, from humble beginnings in Aberdeen in 1866 to his present abode at Darwin's Down House. We follow him through Marischal College, a few years in Siam, the London Hospital and the Museum of the Royal College of Surgeons and into a life of anthropology.

Of biographies: *Florence Nightingale, 1820–1910*, by Cecil Woodham-Smith (London, 1950); *The Life of Dr. John Radcliffe, 1652-1714, Benefactor of the University of Oxford*, by Campbell R. Hone (London, 1950); *S. Weir Mitchell, Novelist and Physician*, by Ernest Earnest (Philadelphia, 1950); *William Withering of Birmingham*, by T. W. Peck and K. D. Wilkinson (Bristol, 1950); *The English Diodatis*, by D. C. Dorian (New Brunswick, New Jersey, 1950); and *The Diary of Silas Neville, 1767–1788*, edited by Basil Cozens-Hardy (New York, 1950).

Also: *William Blake's Engravings*, edited with an introduction by Geoffrey Keynes (London, 1950); a spirited account of *The Royal Hospital, Chelsea*, by C. G. T. Dean (London, 1950); and *I. Vesalius Four Centuries Later: II. Medicine in the Eighteenth Century*, by J. F. Fulton (Lawrence, Kansas, 1950).

"History maketh a young man to be old without either wrinkles or gray hairs; privileging him with the experience of age without either the infirmities or inconveniences thereof. Yea, it not only maketh things past present, but enableth one to make a rational conjecture of things to come" — so says Thomas Fuller. In like manner, the Boston Medical Library is privileging the members of the Massachusetts Medical Society by making things past present and enabling them to make rational conjecture of things to come.

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# MEDICAL PROGRESS

## SURGICAL TREATMENT OF LYMPH-NODE METASTASES

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INTEREST in the problem of management of regional lymph-node metastases has greatly increased during the past ten years. Critical analysis of treatment of cancer has emphasized that failures are often attributable to regional recurrence rather than to widespread generalization of the disease and that a more radical eradication of the regional lymph-node drainage areas might have prevented recurrence.

Basically, the problem of cancer treatment may be resolved into three phases. First, the primary focus of disease must be eradicated. The probability of spread to the regional lymph nodes must be evaluated in each case. When there is any significant probability, the nodal metastases must be dealt with. When the disease has become generalized, the problem passes beyond the possibility of successful eradication by any of the present methods of treatment.

### MECHANISM OF METASTASIS

Significant findings have been made concerning the mechanism of metastasis. The role of the vertebral venous system, demonstrated by Batson, has received confirmation in the experimental studies of Coman and DeLong.[1] Further studies by Coman and his co-workers have emphasized the factors of adhesiveness[2] of cancer cells and of their ameboid motility.[3] Blood-borne metastases spread through the vertebral-venous system; lymph-node metastases arise through loss of adhesiveness and ameboid motility of cancer cells. Handley's belief that lymphatic permeation is the usual mode of lymphatic spread has been largely discredited, except with regard to advanced stages of disease or unusually malignant tumors, although it is implicitly accepted in planning many en-bloc operative procedures. The current concept is one of lymphatic embolism from the primary focus to the regional lymph nodes draining the area. As the normal pathway becomes blocked, because of obstruction at the involved node, collateral pathways become involved, with secondary metastases in other nodes. Retrograde lymph flow and permeation occur when main and collateral drainage channels are completely blocked. Secondary metastasis from an involved node to other nodes more centrally situated is probably an unusual occurrence.

The anatomy of the lymphatic drainage areas has been subjected to critical review and scrutiny. Most of the observations recorded in standard anatomic texts were made by injection studies on normal cadavers; only in recent years have clinicians realized their opportunity to make significant observations about the detailed anatomy of the lymphatics of various regions. Stibbe[4] and Handley[5] contributed findings concerning the role of the internal mammary chain of lymphatics in breast cancer, employing a modified Spalteholz technic. Coller and others[6] made significant studies of the lymphatics and nodes of the stomach and colon. Gilchrist and David[7] and Grinnell[8] have likewise contributed extensive data on the colon and rectum. Similar studies have been made by Monroe[9] on the lymph nodes draining the breast, by Henriksen and Arneson[10] on nodes of the uterus and cervix and by Lewis[11] on nodes of the testicle. Investigation has been begun of lymph nodes draining the lungs[12] and the esophagus.[13] This general critical evaluation of the shortcomings of the formal anatomic texts has been most stimulating.

### OCCURRENCE OF METASTASES

Nearly every report dealing with cancer in recent years has recognized the importance of lymph-node metastases and records their incidence and their effect on prognosis. The more thoroughly the tissues are searched, the higher the discovered incidence of metastasis. The studies referred to above not only have made major contributions to detailed anatomic knowledge but also have increased our knowledge of the behavior of various kinds of neoplasm. Various statistical studies of autopsy findings[14-17] have broadened knowledge of the occurrence of lymph-node metastases. The work of Saphir and Amromin[18] has drawn attention to the high incidence of occult microscopic metastasis of breast cancer. All these findings are further indications for more aggressive treatment of regional lymph nodes.

### TREATMENT

A more aggressive therapeutic attitude is manifested in thorough and carefully planned radical dissections, as part of one-stage en-bloc procedure or as a separate procedure following eradication of the primary carcinoma. X-ray treatment of lymph-node metastases is reserved for those cases in which block dissections cannot be properly carried out,

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in which control of the primary lesion is doubtful, in certain tumors known to be particularly sensitive to radiation and in involvement too extensive to permit surgical eradication. Certain authors[19, 20] employ radiation in preference to block dissection; certain others[21] favor subradical procedures, confining excision to individual nodes in which involvement is clinically obvious. Walker[22] has reported investigations of the use of radioactive colloids in the treatment of certain sensitive tumors.

## Regional Carcinomas

### *Carcinoma of the Skin*

Lavendan[23] has presented data correlating the incidence of lymph-node metastases to the surface extent and the degree of infiltration of the primary cancer. Johnson and Ackerman[24] analyzed carcinomas of the skin of the hand. Cases in which the cancer did not infiltrate below the level of the sweat glands did not present node metastases; those with deeper infiltration metastasized in about one third of the cases. These workers emphasized that the grade of malignancy and previous unsuccessful attempts at eradication of the primary focus were also associated with an increased frequency of metastases. Stout and Cooley[25] studied carcinoma of the sweat glands, reporting 6 new cases with metastases. Stetson and Schulz[26] studied the cases of carcinoma of the eyelid, reporting a low incidence of lymph-node metastases in these usually small cancers of low-grade malignancy. McAnally and Dockerty[27] reported a series of carcinomas originating in chronic draining sinuses and fistulas. Of 9 carcinomas originating in sinuses of chronic osteomyelitis 2 presented regional lymph-node metastases.

Broadly considered, the incidence of lymph-node metastases in skin carcinomas is so low that regional-node dissection may be omitted in the absence of obvious metastasis. When dissection is omitted, close surveillance of the patient for many years is necessary, and dissection is performed promptly if metastases develop under observation.

### *Malignant Melanoma*

Numerous reports[28-31] bear witness to the poor prognosis and high incidence of regional-node metastasis of malignant melanoma. Pack[32, 33] has drawn attention to its relatively benign course and freedom from metastasis prior to puberty and to the increased malignancy of the disease when complicated by concurrent or subsequent pregnancy. This author recommends one-stage en-bloc operations for malignant melanoma involving the extremities, performing major amputations with dissection of the regional lymph nodes. The argument for these radical procedures is apparently based on the assumption of dispersion by lymphatic permeation, which probably does not occur except in advanced stages of the disease. It is our conviction that the author has not proved the necessity for such radical mutilative procedures.

Nearly all authors agree that regional lymph-node dissection is indicated in all cases of controllable cutaneous malignant melanoma, because of the high incidence of lymph-node metastasis. When the primary lesion is so situated that the regional lymphatic drainage is uncertain or overlapping, as in the trunk or shoulder, it may be justifiable to defer dissection until the metastases appear.

## Carcinoma of the Breast

Most authors agree that the incidence of lymph-node metastasis is high in carcinoma of the breast, usually occurring in 60 to 70 per cent of operable cases. Similarly, there is nearly universal agreement that radical mastectomy is the treatment of choice and offers the best prognosis for cases with regional-node metastases. McWhirter,[20] an apostate from this view, advocates simple mastectomy with radiation treatment of the regional lymph nodes. Haagensen[34] has presented a critical review of McWhirter's position, demonstrating the inadequacy of the statistics offered in support of the method. Various authors have considered the desirability of extending the scope of the radical operation, reviving interest in the possible desirability of adding supraclavicular dissection.[35] Handley and Thackray[36] have performed anterior-mediastinal exploration in certain cases of breast cancer. They found nodes involved in metastases in the internal mammary chain in 19 of 50 cases subjected to operation. Gilchrist[37] has suggested utilizing this procedure in more advanced stages of breast cancer; Wangensteen[38] has performed a number of such operations. Certainly there is considerable variation in the extent of the operation described as radical mastectomy. Monroe,[9] for example, found that some surgeons removed twice as many lymph nodes as others and that the prognosis was better when the more extensive operations were performed. Warren and Tompkins[39] demonstrated that the prognosis is related to the number of nodes involved in metastases; Adair[40] has shown the poor effect on prognosis when successively higher levels of nodes are involved in the axilla. Reference has been made earlier to Saphir's[18] demonstration of early metastasis by serial sections of lymph nodes apparently free of cancer.

Various modifications of operative technic have been published, with a view to reducing manipulation[41] or removing wider areas of skin,[34] although the operation remains essentially as described by Handley and Meyer. Preoperative and postoperative radiation are still employed in certain clinics but are gradually being abandoned because of little evidence of benefit.

Postoperative swelling of the arms may be attributable to faulty operative technic, wound infection or postoperative radiation. Macdonald[42]

has suggested that resection of the axillary vein may be carried out as part of the operation, with no increase in lymphedema. Hanelin[43] and Daland[44] have discussed the problem of postoperative lymphedema. Stewart and Treves[45] have reported the development of lymphangiosarcoma in arms that had become swollen after mastectomy.

A number of reports have been made of occult carcinoma of the breast in which the first clinical evidence of the disease was a metastasis — in the axilla or elsewhere.[46]

### Carcinoma of the Mouth

There have been numerous presentations of the surgical problems of oral carcinoma and the cervical lymph-node metastases. In general, there has been a trend toward more extensive use of surgery and to more radical procedures, including a great increase in one-stage en-bloc procedures combining neck dissection with jaw resection and the necessary intraoral surgery. This trend has been aided by the improvement in anesthesia, better preparation of the patients and control of infections. It is premature to evaluate results in terms of increased cures, but there has been a most encouraging decline in postoperative mortality. Conspicuous contributions in this field have been presented by Sugarbaker,[47] Brown,[48] Saltzstein,[49] Macdonald,[50] Ward[51] and Martin.[52]

### Carcinoma of the Lip

There is still considerable disparity among reports from various clinics with regard to incidence of lymph-node metastases. For example, Modlin[53] reported development of metastases in 19.6 per cent of all cases without evidence of metastasis on admission, whereas Sharp and others[54] reported metastases in only 8.6 per cent of all cases. These marked differences must be explained on the basis of variations in the clinic populations. Primary prophylactic dissection in the absence of obvious metastases is rarely recommended if active supervision can be carried out for a number of years. Dissections for positive nodes result in a high percentage of cures, even when they are less radical than the complete radical neck dissection, although the latter is recommended by Martin[52] and some others.

### Carcinoma of the Tongue

In contrast to carcinoma of the lip, carcinoma of the tongue has a high incidence of cervical-node metastasis. Gibbel and his co-workers[55] reported involvement in 68.8 per cent of cases and bilateral involvement in 21.5 per cent. Such figures support the advocacy of prophylactic dissections in these cases. Martin,[56] after careful analysis, concludes that if detailed follow-up is practiced prophylactic dissection seems unwarranted, and that for consistency a prophylactic dissection should be bilateral in all cases.

### Carcinoma of the Larynx

The development of esophageal speech instruction has stimulated the use of laryngectomy. With the increase of long-term cures in more advanced cases, the problem of management of cervical-node metastases has come into prominence. The over-all incidence of node metastases is low in intrinsic laryngeal carcinoma. However, metastases should be carefully watched for, and radical dissections offer a good prospect for cure when they are carried out promptly.

### Carcinoma of the Parotid Gland

Numerous writers have discussed the operative management of parotid tumors, especially in regard to preservation of the facial nerve. When true carcinoma is present, it is generally agreed that the incidence of cervical-node metastasis warrants the performance of a radical neck dissection in continuity.

### Carcinoma of the Thyroid Gland

Cattell[57] has presented the indications for neck dissection in carcinoma of the thyroid gland. Crile[58] is opposed to block dissections, preferring to remove individual nodes as they become obviously involved. This practice seems to have little justification. Duffy and Fitzgerald[59] analyzed the distribution of involved nodes in a series of cases of thyroid carcinoma. In many of their cases the lymph-node metastases were the first evidence of disease. The internal jugular nodes were most commonly involved, corresponding to the sites of the thyroid veins; transverse cervical nodes were involved in a large number of cases, and pretracheal nodes less frequently. There were no instances of metastases involving the submaxillary nodes.

Crile[60] has again drawn attention to the fact that so-called lateral aberrant thyroid carcinomas are really node metastases from a latent focus in the thyroid gland itself.

### Neck Dissection

Reference has already been made to recent publications concerning neck dissection. Martin's[52] contribution is most comprehensive, containing a wealth of clinical material as well as discussion of controversial points.

The problem of the safety of bilateral radical dissection with ligation of both internal jugular veins is discussed. Martin reports 66 bilateral dissections, many of them simultaneous, with no deaths. He minimizes the warnings presented by Sugarbaker and Wiley,[61] who carried out careful venous-pressure studies in these cases and reported a number of disasters. Gius and Grier[62] reported studies on venous adaptation after bilateral jugular ligation. Bowden and Schweizer[63] reported a series

of 18 cases of pneumothorax and mediastinal emphysema complicating neck dissection. In their opinion the complication is due not to operative injury to the pleura but to the rupture of mediastinal emphysema into the pleural space.

### Carcinoma of the Lung

There has been increasing recognition among thoracic surgeons of the necessity of dealing with lymph-node metastases in operations for carcinoma of the lung. Surgeons have begun the mapping out of the detailed surgical anatomy of the lymphatic drainage of the lung and the accessibility of the node metastases to surgical removal. McCort[12] has made a careful study of the x-ray findings attributable to lymph nodes involved in metastases from various foci of primary carcinoma. Gibbon[64] advocates removal of paratracheal lymph nodes concomitantly with pneumonectomy for upper-lobe lesions and removal of the subcarinal nodes beneath the opposite main-stem bronchus for lower-lobe lesions. Some apparent cures have been recorded in cases in which node metastases have been found at operation.[65]

### Carcinoma of the Esophagus

In the treatment of carcinoma of the esophagus, as the technical problems of successful resection have been solved, interest has increased in the problem presented by the lymph-node metastases. Here, as in the lung, there is need of systematic anatomic study to establish the probable areas of node involvement and of development of more radical operative procedures aimed at their eradication.[66] A beginning has been made in this field, although the widespread involvement leads to discouragement. Taquino and Joseph,[67] in a careful study of 145 cases, described "metastases to nodes along the full length of the esophagus and stomach, regardless of the primary level of the individual cancers."

### Carcinoma of the Stomach

The discouraging results of subtotal gastrectomy for carcinoma of the stomach have led to the advocation of total gastrectomy — both to avoid recurrence in the gastric remnant and to ensure wider removal of lymph nodes. Coller's[6] studies on the distribution of metastases have been referred to. Critical analysis of the failures of subtotal resection is necessary in order to determine what part is played by local recurrence and incomplete node removal. McNeer[68] found at autopsy that disease had recurred in the gastric remnant in 52 per cent of cases subjected to subtotal gastrectomy for cancer. Wangensteen advocates re-exploration after apparent cure in cases with node metastases in cancer of the stomach or colon, with the idea of finding and eradicating node metastases overlooked at the original operation. In some instances this re-exploration has been carried out several times. Obviously there is justification for increasing the extent of the radical operation if failures are due to inadequate resections or incomplete node removal.

### Carcinoma of the Colon and Rectum

The careful studies of Gilchrist and David,[7] Grinnell,[8] Dukes[69] and others have established the areas of lymphatic drainage for carcinoma of the colon. Dukes has correlated the incidence of metastases with the histologic type, degree of infiltration, grade of malignancy and various other characteristics of the primary carcinoma. On the basis of these findings, more radical operations are performed as necessary.[70-72] Cornell and Rottino,[73] Grinnell[74] and Bacon and Sauer[72] have discussed lateral and retrograde spread in rectal lesions. Low anterior resections and pull-through operations are less frequently used than formerly, because of the danger of incomplete removal of involved nodes.

Pearson and Fitzgerald[75] reported a series of carcinoid tumors, emphasizing that lymph-node metastases occurred in 38 per cent of the carcinoids involving parts of the bowel other than the appendix. Their findings confirm the earlier studies of Ritchie and Stafford[76] in this respect.

### Carcinoma of the Cervix

Reference has been made to the excellent studies of Henriksen[10] on the dispersion of cancer of the cervix. Dissatisfaction with the ineffectiveness of radiation therapy in node metastases[77] has brought about a revival of radical surgery in the treatment of this disease.[78-80] Modifications of the Taussig operation for eradication of the pelvic lymph nodes have been published.[81, 82] It is generally agreed that the disease remains for a long time localized to the primary site and regional lymph nodes in many cases, and that as long as it remains so localized it may be removed by sufficiently radical surgical measures.

### Carcinoma of the Vulva

Further studies are necessary to establish the frequency with which intrapelvic lymph nodes are involved at a stage when the primary disease is still operable. Berven[83] has reported the results from the Radiumhemmet. The primary disease is treated by means of electrocoagulation, and the regional nodes are treated with teleradium and later by dissection if operable metastases are present. Sixty per cent of patients with no evident metastases survived, and 27 per cent survived of those with operable metastases subjected to dissection. Stening[84] advocates a one-stage very radical en-bloc eradication of the primary focus and the regional nodes. Intercalated nodes are found in the mons veneris; these frequently harbor metastases.

## Carcinoma of the Testicle

Lewis[85] has developed and extended the operation for retroperitoneal lymph-node dissection for carcinoma of the testicle. Cooper and his coworkers[86] have employed a thoracoabdominal approach in order to extend the operation still further. Merren and others[87] are convinced that in embryonal carcinoma the results of x-ray treatment of the nodes are as satisfactory as those of the combination of radiation and dissection. Evaluation of the efficacy of these extensive retroperitoneal dissections must await careful end-result studies.

## Carcinoma of the Bladder

The success of radical surgery in cancer of the cervix has emboldened the urologists to apply the same radical approach in carcinoma of the bladder. Shackman[88] proposed lymph-node dissection with total cystectomy; numerous technics[89-93] have been published. The report of Dean[94] on the bladder tumors listed in the registry of the American Urological Association and similar studies may help to determine the incidence of node metastases correlated with various characteristics of the primary carcinoma. Colby and Kerr[95] have pointed out that node metastases are associated primarily with growths that infiltrate the muscular coats of the bladder. Such observations help to clarify the indications for radical operation. Here again, evaluation of the procedure must await end-result studies.

## Inguinal Lymph-Node Dissection

A number of papers[96-99] have been published on the technic of inguinal lymph-node dissection, showing general recognition of the desirability of carrying the dissection upward along the iliac vessels and of including the obturator nodes. Daseler and others[99] presented the results of anatomic findings in 450 dissections. There is nothing really new in these operations, and the authors are vague on the subject of avoiding postoperative complications such as sloughing of skin flaps, protracted drainage and lymphedema.

## Conclusion

The foregoing partial summaries of the progress in the study and management of lymph-node metastases are most encouraging. They indicate a clear understanding of the cancer problem and a willingness to combat it with radical surgical measures when they offer a reasonable prospect for control.

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## References


1. Coman, D. R., and DeLong, R. P. Role of vertebral venous system in metastasis of cancer to spinal column. *Cancer* **4**:610-618, 1951.
2. McCutcheon, M., Coman, D. R., and Moore, F. B. Studies on invasiveness of cancer: adhesiveness of malignant cells in various human adenocarcinomas. *Cancer* **1**:460-467, 1948.
3. Enterline, H. T., and Coman, D. R. Ameboid motility of human and animal neoplastic cells. *Cancer* **3**:1033-1038, 1950.
4. Stibbe, E. P. Internal mammary lymphatic glands. *J. Anat.* **52**: 257-264, 1918.
5. Handley, R. S., and Thackray, A. C. Internal mammary lymph chain in carcinoma of breast: study of 50 cases. *Lancet* **2**:276-278, 1949.
6. Coller, F. A., Kay, E. B., and McIntyre, R. S. Regional lymphatic metastases of carcinoma of stomach. *Arch. Surg.* **43**:748-761, 1941.
7. Gilchrist, R. K., and David, V. C. Consideration of pathological factors influencing 5 year survival in radical resection of large bowel and rectum for carcinoma. *Ann. Surg.* **126**:421-438, 1947.
8. Grinnell, R. S. Lymphatic metastases of carcinoma of colon and rectum. *Ann. Surg.* **131**:494-506, 1950.
9. Monroe, C. W. Lymphatic spread of carcinoma of breast. *Arch. Surg.* **57**:479-486, 1948.
10. Henriksen, E. Dispersion of cancer of cervix. *Radiology* **54**:812, 1950.
11. Lewis, L. C. Testis tumors: report on 250 cases. *J. Urol.* **59**:763-772, 1948.
12. McCort, J. J., and Robbins, L. L. Roentgen diagnosis of intrathoracic lymph node metastases in carcinoma of lung. *Radiology* (in press).
13. McCort, J. J. Unpublished data.
14. Abrams, H. L., Sniro, R., and Goldstein, N. Metastases in carcinoma: analysis of 1000 autopsied cases. *Cancer* **3**:74-85, 1949.
15. Lachman, E. Common and uncommon pathways in spread of tumors and infections. *Surg., Gynec. & Obst.* **85**:767-775, 1947.
16. Willis, R. A. *Pathology of Tumors.* 992 pp. St. Louis: C. V. Mosby Company, 1948.
17. Walther, H. E. *Cancer Metastasis.* Basel: Benno Schwabe and Company, 1948.
18. Saphir, O., and Amromin, G. D. Obscure axillary lymph-node metastasis in carcinoma of breast. *Cancer* **1**:238-241, 1948.
19. Martin, C. L. Treatment of cervical lymph node metastases with irradiation alone. *Radiology* **55**:62-67, 1950.
20. McWhirter, R. Carcinoma of breast. *Brit. J. Radiol.* **21**:599-610, 1948.
21. Crile, G., Jr. Treatment of papillary carcinoma of thyroid with lateral cervical metastases. *Am. J. Surg.* **80**:419-423, 1950.
22. Walker, L. A. Localization of radioactive colloids in lymph nodes. *J. Lab. & Clin. Med.* **36**:440-449, 1950.
23. Lavendan, J. Fréquence des adénopathies sécondaires aux cancers cutanés de la tête et du cou. *Rev. méd. Liége* **5**:415, 1950.
24. Johnson, R. E., and Ackerman, L. V. Epidermoid carcinoma of hand. *Cancer* **3**:657-666, 1950.
25. Stout, A. P., and Cooley, S. G. E. Carcinoma of sweat glands. *Cancer* **4**:521-536, 1951.
26. Stetson, C. G., and Schulz, M. D. Carcinoma of eyelid. *New Eng. J. Med.* **241**:725-732, 1949.
27. McAnally, A. K., and Dockerty, M. B. Carcinoma developing in chronic draining cutaneous sinuses and fistulas. *Surg., Gynec. & Obst.* **88**:87-96, 1949.
28. Ackerman, L. V. Malignant melanoma of skin. *Am. J. Clin. Path.* **18**:602-624, 1948.
29. Decker, A. M., and Chamness, J. T. Melanocarcinoma of plantar surface of foot. *Surgery* **29**:731-742, 1951.
30. Wright, C. J. E. Prognosis in cutaneous and ocular malignant melanoma: study of 222 cases. *J. Path. & Bact.* **61**:507-525, 1949.
31. Sylvén, B. Malignant melanoma of skin. *Acta radiol.* **32**:33-59, 1949.
32. Pack, G. T. Management of pigmented nevi and malignant melanomas. *South. M. J.* **40**:832-838, 1947.
33. Pack, G. T., and Scharnagel, I. M. Prognosis for malignant melanoma in pregnant woman. *Cancer* **4**:324-334, 1951.
34. Haagensen, C. D. *Carcinoma of the Breast.* New York: 120 pp. American Cancer Society, Incorporated, 1950.
35. Andreassen, M., and Dahl-Iverson, E. Recherches sur les métastases microscopiques des ganglions lymphatiques sus-claviculaires dans le cancer du sein. *J. Internat. Chir.* **9**:27-40, 1949.
36. Handley, R. S., and Thackray, A. C. Internal mammary lymph chain in carcinoma of breast: study of 50 cases. *Lancet* **2**:276-278, 1949.
37. Gilchrist, R. K. Surgical management of advanced cancer of breast. *Arch. Surg.* **61**:913-929, 1950.
38. Wangensteen, O. H. Extended operation for carcinoma of breast. *Tr. Am. Surg. A.* **67**:27, 1949.
39. Warren, S., and Tompkins, V. N. Significance of extent of axillary metastases in carcinoma of female breast. *Surg., Gynec. & Obst.* **76**:327-330, 1943.
40. Adair, F. E. Surgical problems involved in breast cancer. *Ann. Roy. Coll. Surg., Eng.* **4**:360-380, 1949.
41. MacFee, W. F. Non-contusive radical mastectomy. *Ann. Surg.* **131**: 969-975, 1950.
42. Macdonald, I. Resection of axillary vein in radical mastectomy. *Cancer* **1**:618-624, 1948.
43. Hanelin, H. A., et al. Treatment of postoperative swelling of arm following mastectomy. *Arch. Surg.* **55**:725-731, 1947.
44. Daland, E. M. Incidence of swollen arms after radical mastectomy and suggestions for its prevention. *New Eng. J. Med.* **242**:497-502, 1950.
45. Stewart, F. W., and Treves, N. Lymphangiosarcoma in postmastectomy lymphedema. *Cancer* **1**:64-81, 1948.

46. McClintock, J. A. Axillary metastasis as first sign of malignancy of breast. *J. Indiana M. A.* **43**:1092, 1950.
47. Sugarbaker, E. D., and Gilford, J. Combined jaw resection, neck dissection for metastatic carcinoma of cervical lymph nodes secondarily involving the mandible. *Surg., Gynec. & Obst.* **83**:767-777, 1948.
48. Brown, J. B., and McDowell, F. Neck dissections in cancer of oral cavity. *Kentucky M. J.* **46**:114-125, 1948.
49. Saltzstein, H. C., and Johnson, W. Combined jaw resection and neck dissection. *J. Michigan M. Soc.* **46**:1285-1288, 1947.
50. Macdonald, I. Combined radical cervicofacial procedures for primary facial cancer. *Surg., Gynec. & Obst.* **90**:16-20, 1950.
51. Ward, G. E., and Robben, J. O. Composite operation for radical neck dissection and removal of cancer of mouth. *Cancer* **4**:98-109, 1951.
52. Martin, H., DelValle, B., Ehrlich, H., and Cohan, W. G. Neck dissection. *Cancer* **4**:441-499, 1951.
53. Modlin, J. Neck dissections in cancer of lower lip. *Surgery* **28**:404-412, 1950.
54. Sharp, G. S., Williams, H. F., and Pugh, R. E., Jr. Irradiation as preferred treatment of cancer of lip. *J. A. M. A.* **142**:698-707, 1950.
55. Gibbel, M. I., Cross, J. H., and Ariel, I. M. Cancer of tongue. *Cancer* **2**:411-423, 1949.
56. Martin, H. Case of prophylactic neck dissection. *Cancer* **4**:92-97, 1951.
57. Cattell, R. B. Indications for neck dissection in carcinoma of thyroid. *J. Clin. Endocrinol.* **10**:1099-1107, 1950.
58. Crile, G., Jr. Cancer of thyroid. *J. Clin. Endocrinol.* **10**:1152-1170, 1950.
59. Duffy, B. J., Jr., and Fitzgerald, P. J. Thyroid cancer in childhood and adolescence. *Cancer* **3**:1018-1032, 1950.
60. Crile, G., Jr. Papillary carcinoma of thyroid and lateral cervical region. *Surg., Gynec. & Obst.* **85**:757-766, 1947.
61. Sugarbaker, E. D., and Wiley, H. M. Intracranial-pressure studies incident to resection of internal jugular veins. *Cancer* **4**:242-250, 1951.
62. Gius, J. A., and Grier, D. H. Venous adaptation following bilateral radical neck dissection with excision of jugular veins. *Surgery* **28**:305-321, 1950.
63. Bowden, L., and Schweizer, O. Pneumothorax and mediastinal emphysema complicating neck surgery. *Surg., Gynec. & Obst.* **91**:81-88, 1950.
64. Gibbon, J. H., Jr. Cancer of lung. *Tr. & Stud., Coll. Physicians, Philadelphia* **17**:49-60, 1949.
65. Burnett, W. E., Rosemond, G. P., and Hall, J. H. Carcinoma of lung. *J. Thoracic Surg.* **18**:679-683, 1949.
66. Sweet, R. H. Treatment of carcinoma of esophagus and cardiac end of stomach by surgical extirpation. *Surgery* **23**:952-975, 1948.
67. Taquino, G. J., and Joseph, G. F. Carcinoma of esophagus. *Ann. Otol., Rhin. & Laryng.* **56**:1041-1058, 1947.
68. McNeer, G. Carcinoma of stomach. *Cancer* **4**:430, 1950.
69. Dukes, C. E. Relationship of histology to spread in intestinal cancer. *Brit. J. Cancer* **4**:59, 1950.
70. McKittrick, L. S. Principles old and new of resection of colon for carcinoma. *Surg., Gynec. & Obst.* **87**:15-25, 1948.
71. Sugarbaker, E. D., and Wiley, H. M. Significance of fixation in operable carcinoma of large bowel. *Surgery* **27**:343-347, 1950.
72. Bacon, H. E., and Sauer, I. Surgical treatment of cancer of lower bowel. *Cancer* **3**:773-778, 1950.
73. Connell, J. F., Jr., and Rottino, A. Retrograde spread of carcinoma in rectum and rectosigmoid. *Arch. Surg.* **59**:807-813, 1949.
74. Grinnell, R. S. Spread of carcinoma of colon and rectum. *Cancer* **3**:641-652, 1950.
75. Pearson, C. M., and Fitzgerald, P. J. Carcinoid tumors: re-emphasis of their malignant nature. *Cancer* **2**:1005-1026, 1949.
76. Ritchie, G., and Stafford, W. T. Argentaffin tumors of gastrointestinal tract. *Arch. Path.* **38**:123-127, 1944.
77. Parsons, L. Cancer of cervix. Observation on effect of x-ray therapy on regional nodes. *S. Clin. North America* **27**:1231-1239, 1947.
78. Meigs, J. V. Carcinoma of cervix — Wertheim operation. *Surg., Gynec. & Obst.* **78**:195-199, 1944.
79. Twombly, G. H. Technique of radical hysterectomy for carcinoma of cervix. *Cancer* **3**:975-991, 1950.
80. Brunschwig, A. Complete excision of pelvic viscera for advanced carcinoma. *Cancer* **1**:177-183, 1948.
81. Meigs, J. V., Parsons, L., and Nathanson, I. T. Retroperitoneal lymph node dissection in cancer of cervix. *Am. J. Obst. & Gynec.* **57**:1087-1077, 1949.
82. Dargent, M., and Guillemin, G. La place de la lymphadénectomie ilio-pelvienne dans le traitement du cancer du col utérin. *J. Internat. de chir.* **10**:345-372, 1950.
83. Berven, E. G. E. Carcinoma of vulva. *Brit. J. Radiol.* **22**:498-507, 1949.
84. Stening, M. Extended radical vulvectomy of Stanley Way. *M. J. Australia* **2**:823-827, 1950.
85. Lewis, L. C. Testis tumors: report on 250 cases. *J. Urol.* **59**:763-772, 1948.
86. Cooper, J. F., Leadbetter, W. F., and Chute, R. Thoracoabdominal approach for retroperitoneal gland dissection: application to testis tumors. *Surg., Gynec. & Obst.* **90**:486-496, 1950.
87. Merren, D. D., Vest, S. A., and Lupton, C. H., Jr. Treatment of malignant tumors of testis. *J. Urol.* **65**:128-135, 1951.
88. Shackman, R. Treatment of bladder cancer. *Brit. J. Surg.* **35**:140-146, 1947.
89. Marshall, V. F., and Whitmore, W. F., Jr. Technique for extension of radical surgery in treatment of vesical cancer. *Cancer* **2**:424-428, 1949.
90. Leadbetter, W. F., and Cooper, J. F. Regional gland dissection for carcinoma of bladder: technique for one-stage cystectomy, gland dissections, and bilateral uretero-enterostomy. *J. Urol.* **63**:242-260, 1950.
91. Kerr, W. S., Jr., and Colby, F. H. Pelvic lymphadenectomy and total cystectomy in treatment of carcinoma of bladder. *J. Urol.* **63**:842-851, 1950.
92. Graves, R. C., Buddington, W. T., and Thomson, R. S. Total cystectomy for cancer of urinary bladder. *J. Urol.* **63**:821-841, 1950.
93. Millin, T., and Masina, F. Total cystectomy: consideration of technique. *Brit. J. Urol.* **21**:108-127, 1949.
94. Dean, A. L., and Ash, J. E. Study of bladder tumors in registry of American Urological Association. *J. Urol.* **63**:618-624, 1950.
95. Colby, F. H., and Kerr, W. S., Jr. Carcinoma of bladder: evaluation of total cystectomy. *New Eng. J. Med.* **244**:504-506, 1951.
96. Mendelsohn, S. N., and Mansfield, R. D. Radical groin dissection for carcinoma: simplified operative procedure. *Surg., Gynec. & Obst.* **92**:432-436, 1951.
97. Baronofsky, I. D. Technique of inguinal node dissection. *Surgery* **24**:555-567, 1948.
98. Estrade, J. Inguinal dissection for cancerous adenopathies. *Bull. Assoc. franç. p. l'étude du cancer* **35**:26, 1948.
99. Daseler, E. H., Anson, B. J., and Reimann, A. E. Radical excision of inguinal and iliac lymph glands. *Surg., Gynec. & Obst.* **87**:679-694, 1948.

# CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

## Weekly Clinicopathological Exercises

FOUNDED BY RICHARD C. CABOT

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## CASE 37421

### PRESENTATION OF CASE

A forty-eight-year-old man was admitted to the hospital because of midabdominal pain.

Three months prior to admission he noted the onset of a bilateral midabdominal mild pain or ache and that his abdomen was "big and hard." Since the onset of the pain there had been increasing loss of strength and well-being. Shortly after the pain first appeared he began regurgitating small amounts of food after meals, without associated nausea. This persisted until six weeks prior to admission; it then disappeared and did not recur. Two weeks prior to admission there was an episode of frequency and dysuria lasting a few days, during which time he passed a dark-brown urine. After the subsidence of this he had no further urinary symptoms. During the few weeks prior to admission the abdominal pain increased in severity, and although the patient's appetite remained good he stopped eating because it caused distention and increased the pain. Although his bowel habits had not changed, for a few days before admission he took a daily purgative, but this afforded no relief. A few days before admission he noted slight ankle edema for the first time.

There was no known weight loss before admission. He had always eaten a well balanced diet; he had consumed three quarts of beer and one quart of wine daily for many years. For four or five months before the onset of the more acute abdominal pain he had noted a feeling of ill-defined heaviness and discomfort in the abdomen. One year before admission he was butted in the abdomen by a cow. Three months before admission, a few days before the onset of definite abdominal pain, a tractor axle that he was holding slipped, but he denied being hit in the abdomen by it.

On physical examination the head, neck and lungs were normal. The heart was enlarged 2 cm. to the left on percussion, but there were no murmurs or other abnormalities. The abdomen was markedly distended, with an everted umbilicus, and was tympanitic. The right diaphragm was elevated. Peristalsis was active. In the left flank a firm, nontender, nodular mass that did not move with respiration was palpated, and in the right upper quadrant and epigastrium a second firm, nodular mass was felt that did not move with respiration and could not be definitely separated from the left lobe of the liver. There was no fluid wave or shifting dullness. There was ++ ankle edema. Rectal examination was negative.

The temperature was 101.4°F., the pulse 80 and the respirations 20. The blood pressure was 105 systolic, 95 diastolic.

Examination of the blood revealed a hemoglobin of 8.4 gm. and a white-cell count of 6000, with 82 per cent neutrophils. The nonprotein nitrogen was 24 mg., the total protein 5.4 gm., the albumin 3.34 gm., the globulin 2.60 gm., the alkaline phosphatase 2.9 mg. and the serum amylase 63 units per 100 cc. The prothrombin time was 24 seconds (normal, 19.5 seconds). The urine was dark in color and gave an acid reaction and a + test for albumin; the sediment contained a rare red cell and white cell per high-power field. Phenolsulfonphthalein excretion was normal. Stool guaiac tests were negative. Urine and blood cultures were negative. Agglutination tests for typhoid and brucella were negative.

X-ray examination of the chest demonstrated a few strands of basal atelectasis and a few small calcified scars. The left ventricle of the heart was probably enlarged. An abdominal film showed obliteration of the upper three fourths of the psoas shadows bilaterally. There was a mass in the upper abdomen that appeared to be attached to or a part of the liver and displaced the transverse colon somewhat inferiorly. The right kidney was partly seen. It appeared somewhat enlarged but was not as large as the left kidney, which was lower and more to the left than usual. An intravenous pyelogram showed an anomalous left kidney, with a double ureter. There was good concentration bilaterally. The left kidney was larger than the right and lay in a low position. No definite abnormality could be demonstrated on cystoscopy. On the retrograde pyelogram the left kidney was larger than the right, but there was no definite abnormality in the visualized renal pelves. The filled left ureter lay fairly far toward the midline, suggesting extrinsic pressure. A barium-enema examination showed no evidence of intrinsic disease, but the midportion of the descending colon appeared to be displaced to the left, and an enlarged liver depressed the right transverse colon. A few round, irregularly calcified images were noted in the right

upper quadrant outside the kidney shadow. A gastrointestinal series showed no apparent varices, and no intrinsic abnormality could be made out within the stomach, but there appeared to be extrinsic pressure on the antrum of the stomach and the duodenal loop. The pressure appeared to be applied to the anterior aspect of the duodenal loop and the posterior and inferior aspects of the stomach.

The patient continued to have pain and daily elevations of temperature ranging from 100 to

FIGURE 1. *X-Ray Film from Upper-Gastrointestinal Series. Arrows point to anterior and upward displacement of the body of the stomach by the mass.*

102°F. The weight decreased steadily from 195 to 181 pounds. Two 500-cc. blood transfusions raised the hemoglobin to 12 gm. On the seventeenth hospital day an operation was performed.

## DIFFERENTIAL DIAGNOSIS

DR. MARSHALL K. BARTLETT*: Dr. McCort, would you show the x-ray films?

DR. JAMES J. MCCORT: The chest film fails to confirm the physical examination as regards the position of the right leaf of the diaphragm. It is not elevated, and the chest is entirely negative.

The most interesting films are those of the upper gastrointestinal tract. No varices are demonstrated in the lower third of the esophagus. There is a small hiatus hernia, which is probably of no clinical significance. The stomach is displaced anteriorly and upward (Fig. 1), and the first portion of the duodenum is displaced anteriorly to the right side (Fig. 2). This displacement is caused by a fairly well defined soft-tissue mass in the upper abdomen that extends over into the left flank. This mass also displaces the lower portion of the small bowel anteriorly in the midabdomen. Only the retroperitoneal segment of the duodenum remains undisplaced. On a barium-enema examination no intrinsic defects are seen in the large bowel. The mass displaces the right portion of the transverse colon downward and the descending colon laterally to the left.

The intravenous pyelogram shows both kidneys to be within normal limits as to size, shape and position. A bifid kidney is seen on the left side, with

FIGURE 2. *X-Ray Film from Upper-Gastrointestinal Series. Arrows point to the right-sided displacement of the duodenal loop by the mass.*

two pelves and two ureters. The retrograde examination was made to confirm this; again a well defined left and right kidney separate from the abdominal mass are visible. Also, the left ureter is pushed medially by the mass. I might say that we cannot separate the mass from the liver edge in its midportion, but laterally I believe the mass is separate from the edge of the liver.

DR. BARTLETT: Were the psoas shadows equally obliterated?

*Visiting surgeon, Massachusetts General Hospital.

DR. MCCORT: Both psoas shadows were obliterated — more so on the left.

DR. BARTLETT: How about the calcified shadows in the right upper quadrant?

DR. MCCORT: A few calcified shadows in the right midabdomen lie outside the right kidney and outside the limits of the soft-tissue mass. I take them to be calcified mesenteric lymph nodes.

DR. BARTLETT: I think it is fair to assume that this was a retroperitoneal process; it seems to me that the changes seen here could only be caused by something in that area. I should like to go back over this history to see if I can get any lead concerning what kind of mass was present, whether it was one mass or two masses and perhaps whether it was inflammatory or neoplastic.

The abdominal pain as described seems nonspecific. It was bilateral, midabdominal and rather mild at first, becoming more severe later, but it did not have any outstanding characteristics that suggest a specific process. Later on in the course of the illness the pain was aggravated by food, and eating caused distention; beyond suggesting some interference with the function and motility of the upper-gastrointestinal tract this does not help me very much. Coinciding with the onset of this pain, this man noticed a change in the size of the abdomen — it was big and hard. On physical examination it was described as markedly distended and tympanitic. I should be interested to know what caused the change in the size of the abdomen — whether it was fluid, solid tissue or gas. The findings seem rather equivocal. Nothing on physical examination suggested that he had an abdomen full of fluid, nor do the x-ray films suggest that. On the other hand, there were no dilated loops, no large air-filled shadows to help me find an explanation. Hence, I am at a loss to explain this change other than by the presence of the masses that were palpated, but they do not seem quite enough to account for such a striking change in the size of the abdomen.

For about a period of six weeks before the patient came into the hospital he had regurgitation of small amounts of food after meals that stopped spontaneously; there was no nausea with it. It disappeared and did not return. Again, I can interpret that only as indicating some interference with the motility of the upper-gastrointestinal tract. Then he had the transient period of dysuria with dark urine that disappeared spontaneously and did not return — which I cannot explain. Shortly before coming into the hospital he noted slight ankle edema that was confirmed on physical examination. As there was no cardiac or renal explanation for it, I think I must assume it was caused by local intra-abdominal disease that interfered with the returning venous and lymphatic flow from the lower extremities.

On physical examination two definite masses were found. If it is true that there were two masses, that is very important and would rather lead me to think of some malignant process, with a metastatic lesion in the liver to account for the second mass. However, as the epigastric mass did not move with respiration, I am rather inclined to believe that it was a part of the retroperitoneal process rather than metastatic disease in the liver, although I do not see any way of being certain of that. During his stay in the hospital he ran a moderately febrile course, with temperatures of 100 to 101°F. I do not know whether that was a manifestation of an inflammatory process during all this time or whether it represented extensive malignant disease; it could have been either.

The first determination of the hemoglobin showed a rather striking degree of anemia — 8.4 gm. I should pay more attention to that except for the fact that two transfusions brought it up to 12 gm. It seems to me rather unlikely that if he actually had so severe an anemia it could be raised to a nearly normal level by only 1000 cc. of blood. The white-cell count was normal, and most of the laboratory data were within normal limits. The protein was slightly low. The albumin-globulin ratio was not reversed. There was a moderate elevation of the prothrombin time. The serum amylase of 63 units on one observation was moderately elevated by our standards, but how much significance one can give a single observation of that degree is hard to say.

Then, of course, in the background of this patient is the question of alcoholic intake over a long period of time and of what effect that may have had on the disease process. There had also been trauma in the past. In addition to the immediate manifestations of trauma, there are certain conditions that may show up later. I suppose one would have to think in passing of a retroperitoneal hematoma, but it seems that a lapse of a year is probably too long a time to expect such a process to persist and then cause trouble. I think that the trouble would have occurred much sooner. Some pancreatic masses, — pseudocysts, particularly, — are associated with trauma, and I think that is something I shall have to consider.

From what organ did this process arise? I do not believe it is purely traumatic. I do not believe I can make a good case for a renal origin. Although the left kidney was perhaps displaced downward and the ureter displaced medially, the kidneys themselves appeared essentially normal, and the shadows of the renal pelves were normal.

Obviously a retroperitoneal lymphoma is a good bet. Although it seems to me quite unlikely, I see no way that I can rule it out. Against that is a finding that I do not think Dr. McCort emphasized — that is, the enlargement of the duodenal loop, which is a great deal bigger than it ought to be.

It seems to me that it is less likely to show such widening with a mass of retroperitoneal lymphoma.

The organ that is most likely to change the size of the duodenal loop is the pancreas, yet the other changes in the left side of the abdomen and this big mass in the flank would require an extensive involvement of the pancreas by some diffuse disease. I think it is unlikely that a tumor of the pancreas or a true cyst would displace organs in as many different directions as this did.

The original interpretation of the x-ray picture emphasized the compression on the duodenum from the anterior aspect and the pressure on the stomach from behind. If that was true, it would make me think that the pressure on the duodenum was caused by some intraperitoneal process and that perhaps the pressure on the stomach was caused by a different or associated retroperitoneal process. However, I am inclined to think that it was all one process and all one mass. I should like to explain it on the basis of an inflammatory process in the pancreas. The history was rather unusual and long, without any very acute phase. The persistent elevation of the temperature and the moderate elevation of amylase might support such a diagnosis. It seems to me that all in all it is most likely that this man had a subacute pancreatitis for a period of months, with gradual enlargement of the head of the pancreas and the formation of a mass in the left flank. Whether the trauma here was the basis for the onset of this I do not know, and I do not see how it is possible to tell. I certainly cannot rule out a retroperitoneal tumor, — most likely a lymphoma, — but as my first choice I shall put subacute pancreatitis.

Dr. Daniel S. Ellis: Do you think this was a hard solid mass rather than a cystic mass?

Dr. Bartlett: I think it was a mass of inflammatory tissue. It may have had some cystic elements in it. The description does not allow one to make a diagnosis of a large solitary cyst.

Dr. Ellis: Was a cephalin-flocculation test made?

Dr. Glenn Behringer: I do not believe so.

Dr. Claude E. Welch: When I first read the history I thought it suggested retroperitoneal lymphoma, as Dr. Bartlett mentioned. If the second mass was in the liver (one is not too sure that there was a second mass), it would be unlikely for lymphoma to enlarge the liver without enlarging the spleen. Admittedly a differential diagnosis between cyst and carcinoma of the pancreas is very difficult, particularly in the subacute stage, but the hard, nodular, nontender character of the mass would incline me to a diagnosis of malignant rather than inflammatory disease.

Dr. Bartlett: This would have had to be a tremendous tumor to displace the organs as these were displaced.

Dr. Welch: Carcinoma of the pancreas is often associated with cystic accumulation of fluid.

Dr. McCort: With retroperitoneal lymphoma we frequently see lateral displacement of the kidneys by enlarged lymph nodes around the aorta and renal artery. That finding is absent in this patient.

Dr. Benjamin Castleman: This patient entered on the Medical Service. When he was first seen, before the x-ray films were available, the resident believed that he had a hypernephroma with metastases to the liver. Dr. Earle M. Chapman, who was on the service, said the history of recent trauma to the abdomen raised the question of pancreatic cyst but he thought tumor was more likely. After following the patient for some time on the Medical Service, Dr. Chapman asked for a consultation from the Surgical Service. At that time he said: "I am going back to my first impression of pancreatic pseudocyst, due to trauma, from the accident five months earlier when the rear of a tractor came back against the arms and abdomen of the patient." Although the patient had denied that the tractor had hit his abdomen, Dr. Chapman apparently got that information from him. The patient was then operated on. Dr. Behringer, would you tell us the opinion on the ward and what was found?

### Clinical Diagnosis

Retroperitoneal sarcoma with metastases to the liver.

### Dr. Bartlett's Diagnosis

Pancreatitis, subacute.

### Anatomical Diagnosis

*Pancreatitis with fat necrosis and retroperitoneal dissection into pelvis.*

### Pathological Discussion

Dr. Behringer: The preoperative diagnosis was retroperitoneal sarcoma with metastases to the liver. At operation it became obvious that the right-upper-quadrant mass was the hugely edematous head of the pancreas, which was adherent to the structures in the right upper quadrant. The edematous portion of the pancreas extended to the midline and into the body of the pancreas, which seemed either to be related to the mass or part of another mass that extended down through the left gutter into the false pelvis. A needle was inserted into the head of the pancreas, but no fluid could be aspirated, so we believed it had not yet undergone cystic degeneration. The retroperitoneal mass in the left gutter contained material of about the consistence and appearance of lard. This was examined at the time of operation and showed only fat necrosis on frozen section. The abdomen was closed without drainage, and the patient is still on the ward. He

has improved symptomatically and his dietary intake has improved, but he is still running a daily temperature of 100 to 101°F.

DR. CASTLEMAN: The biopsy specimen was made up entirely of fat necrosis. We do not know whether the injury produced the lesion or not, but I suppose it is a very good possibility.

I recall one case that Dr. Daniel Fiske Jones operated on years ago for an ischiorectal abscess in which the biopsy showed fat necrosis. Autopsy later on showed a pancreatitis that had dissected downward retroperitoneally into the pelvis and presented in the ischiorectal fossa.

DR. BARTLETT: I do not think I should have had the courage to make that diagnosis on such an extensive process, except that I saw one patient about a year ago on whom the diagnosis was not made until the abscess pointed to Poupart's ligament. The abscess was drained, and the examination of the fluid from that sinus established the diagnosis. It was very high in amylase.

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## CASE 37422

### PRESENTATION OF CASE

*First admission.* A forty-three-year-old man was referred to the hospital because of persistent albuminuria.

Five years before admission the patient had an insurance examination at which time the urine and blood pressure were reported to be normal. One year later he consulted his physician because of a severe sore throat and was found to have albumin in the urine; this decreased after penicillin treatment. Two and one-half years before admission he developed ankle edema. The blood pressure was found to have risen to 160 systolic, 110 diastolic, and the liver and spleen were felt to be enlarged. Laboratory examination revealed albuminuria, hypercholesteremia and hypoproteinemia. An intravenous pyelogram showed poor renal function. About this time he began to have throbbing frontoparietal or occipital headaches on awakening in the morning that disappeared on arising. The edema disappeared on a salt-free diet and rest but promptly recurred with any lapse from this regimen. Three months before admission the patient began to have abdominal distress and nausea without vomiting. Three-times nocturia developed. The edema became more pronounced and began to involve the hands as well as the ankles. He was then referred to the hospital for treatment.

The patient's previous health had been excellent. There had been no known parasitic infections or exposure to toxins. A past history of rheumatic fever or scarlet fever was denied. The patient's mother had died at the age of fifty-six of uremia and hypertension.

On physical examination the fundi showed arterial narrowing, tortuous veins, arteriovenous nicking and a few patchy exudates. The left border of cardiac dullness was 1 cm. to the left of the midclavicular line; the point of maximum intensity was at the midclavicular line. There was normal sinus rhythm. A Grade II aortic systolic murmur was heard. The lungs were clear. A nontender liver and spleen were easily palpable three and two finger-breadths below the costal margin respectively. There was +++ pitting edema of the ankles and + edema of the hands.

The temperature was 98.6°F., the pulse 68 and the respirations 20. The blood pressure was 180 systolic, 134 diastolic.

The urine had a specific gravity of 1.014 and gave a ++ test for albumin and a + Benedict reaction; the sediment contained rare red and white blood cells and occasional hyaline casts. Less than 5 per cent of injected phenolsulfonphthalein was excreted at the end of 15 minutes, 30 minutes, 1 hour, and 2 hours. On a urine-concentration test the maximum specific gravity reached was 1.012. No Bence-Jones protein could be demonstrated. Esbach's test showed 0.5 per cent protein in 2.8 liters of urine. Alpha-hemolytic streptococci and a few colonies of *Staphylococcus albus* were grown from a urine culture. Examination of the blood revealed a hemoglobin of 10 gm. and a white-cell count of 5000, with a normal differential. The carbon dioxide was 19 milliequiv., the chloride 106 milliequiv., the potassium 4.9 milliequiv. and the sodium 143.7 milliequiv. per liter. The nonprotein nitrogen initially was 72 mg. per 100 cc., and ranged from 45 to 90 mg. during the hospital course; the calcium was 7.6 mg. with a range of 7.4 to 8.2 mg., the phosphorus 6.0 mg. with a range of 4.5 to 9.0 mg., the serum alkaline phosphatase 2.0 units, the total protein 5.21 gm. with an albumin-globulin ratio of 1.1, the serum creatinine 7.9 mg. and the uric acid 4.5 mg. per 100 cc. The prothrombin time was normal. A cephalin-flocculation test was negative at 24 and 48 hours. A serum bilirubin was 0.4 mg. direct and 0.7 mg. total per 100 cc. A bromsulfalein test showed 1 per cent retention at the end of 45 minutes. A Congo red test showed 29 per cent retained in the serum at the end of one hour. The corrected sedimentation rate was 1.25 mm. per minute, with a hematocrit of 29. Biopsies of the liver and of the sternal marrow revealed no diagnostic abnormality. An electrocardiogram was considered abnormal because of ST segment and T-wave changes consistent with early hypertension.

Skull films were unremarkable. An intravenous pyelogram showed no apparent excretion of dye in the course of two and one-half hours. The kidneys were poorly visualized but appeared to be normal in size, shape and position. No stones were seen. The liver and spleen were enlarged. The visualized bones were unremarkable.

The patient remained ambulatory throughout the hospital course and was given a low-salt diet. The blood pressure remained elevated, averaging 180 systolic, 110 diastolic. He was afebrile except for a three-day episode, believed to be influenza, in which the temperature rose to 101°F. After this he lost seven pounds over a five-day period, maintaining a consistent weight of 175 pounds thereafter. He received a total of 2000 cc. of whole blood in transfusions, in spite of which the hemoglobin did not rise above 11.7 gm. per 100 cc. A course of Gelusil lowered the serum phosphorus temporarily, but this returned to abnormally high levels as soon as medication was stopped. A course of ferrous sulfate had to be discontinued because of gastrointestinal discomfort. The patient was discharged on the sixty-sixth hospital day showing little objective improvement.

*Final admission* (six weeks later). About two weeks after discharge the patient developed nausea, vomiting and severe diarrhea. The nausea and vomiting progressed so that for the 10 days immediately prior to admission the patient was able to take only minimal amounts of food. For three weeks prior to admission he had also had severe insomnia. Ten days before entry he noticed gradual blurring of vision that rapidly progressed to near-blindness.

Physical examination on readmission showed a pale, lethargic, chronically ill man with a puffy face and a ketone odor to the breath. The disk margins were blurred in both eyes, and there were abundant exudates in the fundi. The blood pressure was 200 systolic, 130 diastolic. The heart did not appear to have changed in size; the sounds were normal, and there was normal sinus rhythm at a rate of 30. The lungs were clear and the abdomen was unchanged. There was + pitting edema of the ankles. Chvostek's sign was negative and no tetany could be demonstrated.

The urine had a specific gravity of 1.012 and contained ++ albumin. The sediment contained 4 red cells, 7 white cells and rare hyaline and granular casts per high-power field. The hemoglobin was 8.0 gm. per 100 cc. and the white-cell count was 8100. The serum nonprotein nitrogen was 177 mg., the total protein 4.8 gm., the phosphorus 12.1 mg., the alkaline phosphatase 2.5 units and the serum calcium 7.0 mg. per 100 cc.; the carbon dioxide was 13 milliequiv., the potassium 5.0 milliequiv., the sodium 133.1 milliequiv. and the chloride 98 milliequiv. per liter. The blood pH was 7.27. One antistreptolysin titer was 62.

The patient's fluid intake was restricted to two liters per day, and he was placed on a low-sodium, low-protein diet. Severe nausea and vomiting persisted and precluded treatment with Amphojel. He was given 7 250-cc. transfusions of packed red cells and repeated intravenous infusions of glucose with racemic sodium lactate. The blood carbon dioxide gradually rose, remaining at 20 to 23 milliequiv. per liter throughout the course, and the blood pH rose to 7.40, but the hemoglobin remained between 6.2 and 9.4 gm. per 100 cc. The blood pressure remained elevated, averaging 200 systolic, 110 diastolic. In spite of the patient's poor caloric intake, his weight ranged between 188 and 195 pounds. The urinary output, which was below 500 cc. per day at the time of admission, rose to 1200 cc. per day during the second hospital week, falling thereafter to 500 cc. The nonprotein nitrogen rose to 280 mg. per 100 cc. The serum phosphorus rose terminally to 20.2 mg. per 100 cc. and the calcium fell to 5.6 mg. per 100 cc. (checked). Alkaline-phosphatase determinations were not made at this time. The other blood chemical determinations showed no significant change during the course.

The early phases of his hospitalization were complicated by a severe nosebleed, which responded to cauterization. During the second week there was short-lived subjective improvement and a marked return of vision. An electrocardiogram taken at this time showed no evidence of pericarditis, but four days later a loud pericardial friction rub was heard. In the third week there was painful swelling of the right parotid gland that responded to penicillin. In the fourth hospital week the patient developed urinary retention and was placed on catheter bladder drainage. He began to complain of extreme weakness and restlessness. The pericardial friction rub had by this time disappeared. A positive Chvostek sign developed, and the patient began to suffer from generalized twitchings. On the twenty-eighth hospital day these responded somewhat to intravenous administration of calcium gluconate. However, during the night the twitching returned and progressed to generalized convulsions. The patient became apneic and intensely cyanotic. Respirations and normal color returned briefly, but the patient died a few minutes after the beginning of the acute episode.

## Differential Diagnosis

Dr. Earle M. Chapman*: "The Congo red test showed 29 per cent retention at the end of one hour." Was this a Paunz test or was it compared with the four-minute standard?

Dr. William S. Clark: The four-minute standard was used.

Dr. Chapman: "One antistreptolysin titer was 62." That puzzles me; I do not know what the normal value is.

Dr. Clark: Anything under 150 is considered normal.

Dr. Chapman: "The urinary output, which was below 500 cc. a day at the time of admission, rose to 1200 cc. a day during the second hospital week." The critical level, I believe, is about 500 cc. a day.

*Associate physician, Massachusetts General Hospital.

DR. CLARK: The urine excretion did not reach 1200 cc. a day. The patient had become anuric and was found to have a distended bladder. The 1200 cc. represents bladder urine withdrawn by a catheter.

DR. CHAPMAN: From the standpoint of the clinician I think one can safely join with the classification of the late Dr. Henry Christian and call this disease chronic nephritis with edema. This forty-three-year-old patient came in because of persistent albuminuria of four years' duration that had been discovered at the time of an acute severe sore throat. One and a half years after this episode he developed the edema. This combination surely suggested the natural history of the course of Bright's disease. By the time studies were made in this hospital he had the changes imposed on the vascular system and its fluid media that are classically seen as the aftermath of severe bilateral renal injury. Some might call the triad of albuminuria, hypercholesteremia and hypoproteinemia the nephrotic syndrome. Progressive renal failure led to his death in uremia, with hypertensive encephalopathy, which may happen late in nephrosis. The element that the injured kidney is least able to excrete is phosphorus; this accounts for the high serum phosphorus, which has forced down the calcium although the serum alkaline phosphatase is normal — a chemical combination that fits with the tetany and favors the finding of the secondary type of hyperparathyroidism. The refractory state of the anemia, with failure to improve after 7 transfusions, is another characteristic of nephritis — and one that discourages some clinicians from continuing to pour blood into a patient dying in uremia.

These are my diagnoses, and I am going to stick to them. But then, when one goes home at night and begins to think about the details of this case, one can easily develop a queasy feeling of uncertainty about the mechanism that caused the renal injury. This doubting is reflected in the barrage of laboratory data and suggests to me that the physician in charge was doggedly determined to find a primary disease such as subacute bacterial endocarditis, polycystic kidneys, multiple myeloma or, last but far from least, amyloidosis.

The absence of prolonged fever, the lack of a rheumatic history and the absence of embolic phenomena in other organs are clinical points against endocarditis causing embolic glomerulonephritis. But why was not a blood culture made after alpha-hemolytic streptococci were cultured from the urine?

Multiple myeloma is almost certainly excluded by the absence of rouleaux formation in the pipettes, the lack of Bence-Jones protein, the normal bone pattern in the x-ray films and the sternal-marrow biopsy that revealed no diagnostic abnormalities.

Finally we come to the possibility of deposits of amyloid in the basement membrane of the glomerular capillaries and even down along the tubules. The affected glomeruli may then have undergone hyalinization and the whole nephron become functionless and atrophic. This has been described in small shrunken kidneys as well as in the classic large, pale, lardaceous ones. The big liver and spleen suggest that all three of these organs may have been affected, in the classic fashion of secondary amyloidosis. If so, one again seeks an antecedent process such as chronic infection, tuberculosis, chronic bone or skin disease or, as Murray Steele pointed out in 1948, rheumatoid arthritis. Steele and others[1] reported 10 cases in which amyloidosis was a complication of rheumatoid arthritis and mentioned 40 such cases in the literature. Our patient seems to have had none of these diseases. Thus secondary amyloidosis seems unlikely. Primary amyloidosis seems less likely. In one of the Cabot Case Records[2] Dr. Castleman remarked that the classic form of the primary type includes macroglossia and invasion of the heart muscle that stimulates forms of heart disease with congestive failure. However, Dahlin[3] reviewed 55 cases of primary amyloidosis and reported that, contrary to the widespread belief that they are rarely affected, the liver, spleen and kidney contained amyloid in more than one third of the cases. In 3 of the recorded cases of primary systemic amyloidosis terminal renal failure occurred. Other items against amyloidosis are the normal liver-function tests and the negative liver biopsy. I am surprised that a liver biopsy was performed in a suspected amyloid case, since we had a case of fatal hemorrhage following a punch biopsy on an amyloid liver.[4] There is only one little shred of evidence to favor amyloidosis — the Congo red test; 29 per cent was retained in the serum at the end of an hour. I won't buy it. One other criticism of this test in this patient is the presence of anuria. What do you do then, Dr. Clark?

DR. CLARK: In these cases we can extrapolate.

DR. CHAPMAN: That is a good word, Dr. Clark!

DR. CLARK: The Congo red test used in this hospital is the method of Bennhold,[5] measuring the rate of removal of the dye over a sixty-minute (actually fifty-six minute) period and is reported as dye remaining in the serum. Four minutes are allowed for maximal dispersion of the dye in the circulating blood. Disappearance of the Congo red is logarithmic. We consider at least 60 per cent removal as evidence of amyloid disease, but some believe that 100 per cent must be removed to be of significance. If all the dye has disappeared at four minutes, then the rate of removal is greater than 100 per cent. If one is concerned about the dye removed before four minutes, a theoretical maximum concentration can be derived by plotting a logarithmic curve of concentration against time and extrapolating at zero time. In practice this is not

necessary except when there is a delay in obtaining the initial sample.

DR. CHAPMAN: I still think he had chronic nephritis with edema. I do not think he had amyloid disease.

DR. JACOB LERMAN: I should like to stick my neck out and say that he had amyloid kidneys.

DR. ALFRED KRANES: He had a ++++ albumin. I wonder whether the kidneys were examined during that period. Perhaps he was not excreting the Congo red and the finding was a false positive.

DR. CLARK: The urine was not checked for Congo red.

A PHYSICIAN: I should like to ask about the effect of the edema on the Congo red test.

DR. CHAPMAN: It takes a long time for the other tissues to pick the dye out of the blood when there is circulatory edema.

The Bennhold method has been criticized because in cases of amyloidosis much of the injected dye may be removed in the four-minute period, causing the percentage-removal determination to be too low. Paunz[6] proposed a simple qualitative method that avoided the use of the four-minute standard. He injected a small dose, 1.2 mg. per kilogram, and read the result as negative or positive on the basis of the presence or absence of the dye in a specimen drawn one hour after injection. All versions of this test are subject to the basic criticism that nonamyloid removal of Congo red from the blood is larger in some persons than that due to amyloid in some proved cases of amyloidosis.

These confusing findings might not rob the test of its utility if one person or institution could acquire enough experience with pathologically proved cases. We have not had it here. At the Sea View Hospital Selikoff[7] acquired considerable experience; he proposed that 100 per cent removal of dye in 2 consecutive tests be required as the criterion of a positive diagnosis. He found a few patients showing 100 per cent removal on one occasion who proved not to have amyloidosis. He stated that 90 per cent or more removal was suggestive of amyloidosis and less than 90 per cent was negative. But this negative group included 24 per cent of his 105 cases proved at autopsy. Any method fails in the presence of circulatory stasis. The procedure must be regarded as much less specific than histologic examination.

DR. DANIEL S. ELLIS: Dr. Chapman mentioned the danger of doing a liver biopsy on patients with amyloid disease. Dr. Kranes a few years ago referred me to an article written in 1928 by a Scandinavian[8] who followed a series of patients with amyloid disease and amyloid liver by liver biopsy. He reported that in 30 cases there had been no ill effects. Since then I have been willing to do liver biopsies on patients in whom that disease was suspected unless there was some other contraindication.

DR. CLARK: In studying this patient we were somewhat puzzled by the hepatosplenomegaly. We thought that it could not be explained on the basis of chronic glomerulonephritis and for that reason believed that he had amyloid disease — which was corroborated by the Congo red test but not supported by the liver biopsy. We paid very little attention to the moderate number of streptococci in the urine.

I agree with much of what Dr. Chapman said about the Congo red test. We have seen amyloidosis with perfectly normal tests; we have seen amyloid disease with retention in this range; and we have also seen it with complete disappearance of Congo red from the blood and have been able to demonstrate amyloid at autopsy. Our working diagnosis was glomerulonephritis. We had no good explanation for the hepatosplenomegaly.

### CLINICAL DIAGNOSIS

Chronic glomerulonephritis.

### DR. CHAPMAN'S DIAGNOSIS

Chronic nephritis with edema.

### ANATOMICAL DIAGNOSES

*Chronic glomerulonephritis.*
*Parathyroid adenoma.*
Anasarca.
Pericarditis, uremic.
Hepatomegaly.
Splenomegaly.

### PATHOLOGICAL DISCUSSION

DR. BENJAMIN CASTLEMAN: The autopsy confirmed everything that Dr. Chapman predicted. The patient had no amyloid disease anywhere. The primary disease was in the kidney; he had a classical chronic glomerulonephritis, with characteristic glomerular crescents. The liver weighed 2700 gm., — probably 1000 gm. more than it should be, — but we could find nothing abnormal about it. This man was a large person, and perhaps one cause for the enlarged liver may have been his size. The spleen was enlarged and weighed 560 gm. There was a large amount of fibrosis and hemosiderin — more hemosiderin than I think can be accounted for by the multiple transfusions (he had had an enlarged spleen before he received transfusions). There was severe anasarca, with 3 or 4 liters of fluid in the abdomen and 2 or 3 in each side of the chest; the heart showed a typical uremic pericarditis.

An interesting finding shown in the slide (Fig. 1) of the parathyroid glands was an enlarged right upper gland. You can see that there is a rim of normal parathyroid around a solid nodule. The other three glands are normal, have a normal amount of fat and show no evidence of secondary

hyperplasia, which one might expect to find in a man with chronic renal insufficiency of 2 or 3 years' duration. The presence of 3 normal glands and a capsule of normal gland around a localized process makes one almost certain that this nodule is an adenoma. I do not know how to explain the finding of a low calcium with an adenoma, unless it was due to the fact that he had so much renal insufficiency. Perhaps that is why he had a phosphorus of 20, which is about as high as it ever gets. With a primary parathyroid tumor he should have had a low phosphorus and a high calcium. The cells in the adenoma look active, but until we get a stain for parathormone I do not suppose we can be sure. I do not believe I have heard of a localized adenoma's being produced by chronic renal insufficiency, although I suppose it is a possibility. Ordinarily one would expect all four glands to be involved.

FIGURE 1.

A PHYSICIAN: How large were the kidneys?

DR. CASTLEMAN: They weighed 300 gm. and showed so much scarring that I believed they had been much larger originally, to go along with the large liver and spleen.

A PHYSICIAN: What about the bone?

DR. CASTLEMAN: It was normal. There was no evidence of renal osteitis fibrosa. You would not expect it with a normal phosphatase.

DR. FELIX O. KOLB: Dr. Castleman, was there anything in your examination to suggest acromegaly? This would explain the splanchnomegaly and would also be an added reason for the high serum-phosphorus level.

The possibility of a spontaneous adenoma in a hyperplastic parathyroid gland in this patient brings to mind a rather similar situation in a patient with acromegaly recently studied at the Endocrine Clinic. In most cases of acromegaly the serum-phosphorus level is found to be elevated,[9] whereas the serum calcium level is normal. Even though there is little evidence for the existence of a parathyrotropic hormone of the anterior pituitary gland, hyperplasia and even adenomas of the parathyroids are a common finding in patients with acromegaly. Dr. Albright believes that this hyperplasia is due to an increased need for parathyroid hormone to keep the serum-calcium level normal in the presence of a high serum phosphorus — a situation somewhat similar to that found in a patient with chronic renal disease. Our patient with acromegaly had a normal rather than a high serum phosphorus and showed an elevated calcium level with hypercalciuria, which had caused the formation of kidney stones. This strongly suggested that one of the hyperplastic parathyroid glands had become adenomatous, and on exploration such an adenoma was actually found. The subsequent clinical course of this patient, showing a fall of the serum calcium to normal with a rise of the phosphorus level and loss of hypercalciuria, made this diagnosis almost certain.

DR. CASTLEMAN: We also thought of acromegaly as an explanation of the enlarged parathyroid gland, as there are reports in the literature of this combination. I personally have never been convinced of the relation. This patient showed none of the external features of acromegaly and the pituitary gland was normal.

## REFERENCES


1. Unger, P. N., Zuckerbrod, M., Beck, G. J., and Steele, J. M. Amyloidosis in rheumatoid arthritis: report of 10 cases. *Am. J. M. Sc.* **216**:51-56, 1948.
2. Case Records of the Massachusetts General Hospital (Case 35141). *New Eng. J. Med.* **240**:572-577, 1949.
3. Dahlin, D. C., Stauffer, M. H., and Mann, F. D. Laboratory and biopsy diagnosis of amyloidosis. *M. Clin. North America* **34**:1171-1176, 1950.
4. Volwiler, W., and Jones, C. M. Diagnostic and therapeutic value of liver biopsies: with particular reference to trocar biopsy. *New Eng. J. Med.* **237**:651-656, 1947.
5. Bennhold, H. Über die Ausscheidung intravenös einverleibten Kongorotes bei den verschiedensten Erkrankungen insbesondere bei Amyloidosis. *Deutsches Arch. f. klin. Med.* **142**:32-46, 1923.
6. Németh, L. Über den klinischen Wert des Nachweises der Amyloidose durch die Kongorotprobe. *Klin. Wchnschr.* **5**:1040, 1926.
7. Selikoff, I. J. Diagnosis of generalized amyloidosis by Congo red test: definite diagnostic criteria. *Am. J. M. Sc.* **213**:719-727, 1947.
8. Waldenström, H. Formation and disappearance of amyloid in man. *Acta. chir. Scandinav.* **63**:479-530, 1928.
9. Reifenstein, E. C., Jr., Kinsell, L. W., and Albright, F. Observations on use of serum phosphorus level as index of pituitary growth hormone activity. *J. Clin. Endocrinol.* **6**:470, 1946.

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## STRAW MAN, STRAW WORLD

In his presidential address before the thirty-third annual meeting of the National Malaria Society, Dr. Paul F. Russell[1] quoted the editorial opinions "of a very sound medical journal" — presumably this one, inasmuch as the statements he cites may be found in the *Journal* of July 13, 1950.[2]

According to Dr. Russell, "the editor complained that 'to eliminate disease as one of the natural checks and balances of a nation's population is to be confronted with other checks, such as famine, lack of *Lebensraum* and war, forces exploited by Hitler and Mussolini.' The editor rightly commented, apropos of the Federal Point Four Program," continues Dr. Russell, "that our vision should be broader than that of Johnny Appleseed. 'A beneficent impulse to prevent disease instead of planting apples is not enough in the second half of the twentieth century . . . Good public health is more than the absence of disease. It is a part of good ecology.' We [Dr. Russell] certainly endorse this sentiment for it is obvious that human ecology and human welfare are intimately and intricately related. But then the editor makes the statement that 'liberation from disease without preparation for a balanced ecology within the domain of a people's environment may just as well be the key to overpopulation, unemployment, communism and war as to peace, prosperity and perfection.' The editorial ended with the statement that 'man has already opened Pandora's box and found that the nucleus of the atom lies within. He still has the lid of the box open when he releases all the mechanisms that limit the increase of human populations, without anticipating and preparing for the consequences of his own good intentions.'

"These remarks," says Dr. Russell, "seem to imply that unless we can prepare in advance for such problems as overpopulation we must slow down on public health efforts lest we do harm. This implication, besides being disturbing on humanitarian grounds, seems to me to lack perspective. It appears to reflect emotions aroused by pessimists like William Vogt. The latter's argument, and that of other neo-Malthusians, seems to be that unless we allow natural forces to decimate populations, we may as well give up hope of continuing civilized life. Vogt criticizes the 'dangerous doctor' who tries to prevent illness and death. Sanitarians, he writes, '. . . set the stage for disaster; then, like Pilate, they wash their hands of the consequences.' Vogt seems to believe that the first step toward the world's salvation should be to stop malaria control and other public health work — not, of course, in the United States, but only in far distant places among the Chinese, the Indians, and the Africans!"

Dr. Russell has created a straw man and given him one whale of a licking. These columns have never advocated or implied the withholding of public-health efforts, nor is there any indication that Vogt advocates it when he emphasizes that the physician can make sins of omission as well as of commission. Co-operation with nature is a two-way

venture. It is no way out of the dilemma to create a straw world and let the population problem, caused by man's fecundity and his control over disease, go by default to starvation and warfare.

With the problems confronting the National Malaria Society becoming more international than national, the day is already at hand when a specimen of *P. falciparum Americae* should be carefully preserved for posterity, with the passenger pigeon and the dodo.* About the only malaria to be found in the United States today is imported from Korea. The greater health problem appears to be in Korea, where, to paraphrase the same editorial, liberation from disease without preparation for a balanced ecology may just as well be the key to misery and aggression as to life, liberty and the pursuit of happiness.

Dr. Russell can beat up a straw man — but this is not a straw world. The problems of global ecology are too pressing, too brutal, too much involved with conflicting ideologies, economies and armies to be allowed to go unsolved by man — and therefore be solved through default by inexorable Nature. Man's co-operative mastery of nature has been characterized as a two-way venture. Ignoring nature, populations, like cancers, may squeeze themselves to death — or metastasize. The social objective, of course, like homeostasis for the individual,[3] is a balanced ecology at the global level of existence. Such an objective is thoroughly consistent with scientific and religious principles. This contention would have shocked those good citizens of Salem who once burned witches instead of studying them. It may shock many today who find themselves unable to reason with North Koreans and Chinese Communists and so must perforce burn them or be burned. It will be too late to study ecologic problems objectively if atomic war ever breaks out, and we can only hope that Dr. Conant is right when he looks into his plastic ball for the American Chemical Society and predicts that atomic war will be averted through "the narrowest of margins." His prophecy is accompanied by another prediction — that the problem of overpopulation "promises to be in hand before 2050." He foresees that future peoples will date the changed attitude toward overpopulation from 1951, when Nehru advocated birth-control clinics in India, and 1961, when biochemists will have made available "cheap and harmless antifertility components to be added as one saw fit to the diet."

Population pressures present themselves for serious study not only by Dr. Conant and Dr. Russell but by every citizen of the world — "in far distant places among the Chinese, the Indians, and the Africans," and also in Massachusetts and California, in Hawaii and Puerto Rico.

*According to an item released by the Federal Security Agency on September 7, 1951, Surgeon General Leonard Scheele reports that "only two proved new cases of malaria contracted in the United States have been reported in this country so far this year."

### References

1. Russell, P. F. Malaria and society. *J. Nat. Mal. Soc.* **10**:1-7, 1951.
2. Editorial. Brave new world. *New Eng. J. Med.* **243**:61, 1950.
3. Cannon, W. B. *Bodily Changes in Pain, Hunger, Fear and Rage.* 311 pp. New York: Appleton, 1925.

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## "HE THAT LAYETH UP TREASURE"

In the midst of unrest and danger and threats to the cherished social and economic institutions of the world, it is natural that there should be a turning toward whatever seems to offer security — or whatever can be labeled by that name. Security has been the goal of the common man since first he blockaded himself in his cave; it has been the intermittent, always vulnerable achievement of possessive man since flocks first were grazed in the Fertile Crescent between the twin rivers of Mesopotamia.

The purchase of a soft security, however, is always made at too great a price for the inert thing that it represents. A life untroubled by want from the cradle to the grave would be also a life unmarked by glorious hours, untouched by lofty emotions and unstirred by noble risks; it would be no more than a vicarious participation in the tumultuous affairs of the world — and the only guarantee that might accompany it could concern only its inevitable ending.

The security that seems to come from possessions, however gained, or from defensive walls against an enemy, or from the easy promises of a paternalistic government, is an armor full of holes when compared with the lance of personal courage that each might carry. It is not through the removal of obstacles that man makes headway, but through the courage to overcome them. For where the climate is severe,

Hippocrates wrote, the people are "hard, stubborn and independent."

" 'Tisn't life that matters!" as old Frosted Moses said in Hugh Walpole's *Fortitude*, having retired to the warm corner by the door, " 'Tis the courage you bring to it." The courage that he had in mind was that which carries with it the only true security, — the "courage of the commonplace," — protecting its wearer against too great a buffeting from the small tragedies of everyday life as well as against the great cataclysms that periodically demonstrate the irony of man's failure to keep his ethics abreast of his technic.

Much of life continues to be a compromise between good and evil, as it has been through the ages, but today there seems to be revealed an extraordinary blunting of the moral sense, even in high places, and a disturbingly complacent acceptance of the evil that exists. The true security, according to Junius, is public honor.

The only answer to the challenge appears to lie not in a passive apparent security, — a withdrawal from the realities of existence purchased with inflated currency, — but in the reactivation of certain basic virtues that are dependent on the courage to face facts as they are. "The courage is needed to say 'No' when to say 'Yes' is easier and pleasanter; to recognize the truth and to admit the inability to find the truth." Courage is required to remain humble when others are vaunting themselves; to continue a righteous struggle when the effort seems doomed to failure; to fail, still striving for what has been accepted as the right.

The counsel of Sir James Barrie to the students of the University of St. Andrews on the occasion of his installation as rector is to the point:

> This courage is a proof of our immortality, greater even than gardens "when the eve is cool." I cannot provide you with this staff for your journey. You shall cut it — so it is ordained — every one of you for himself. It is . . . the rib of Himself that God sent down to His children.

## NICHOLAS OF CUSA

Nicholas of Cusa, who was born in 1400 or 1401 and died in 1464, was a celebrated German cardinal, philosopher and administrator. Educated at the universities of Heidelberg and Padua, he studied Latin, Greek, Hebrew and Arabic. From Padua he received the degree of Doctor in Canon Law. He began his public career in 1431 at the Council of Basle, became prominent in religious circles and was made a cardinal-priest by Nicholas V in 1449. His works, of which the first was written in 1432, fall into four categories: juridical, philosophical, theological and scientific. He was interested in astronomy and mathematics and wrote on these subjects. His two philosophical treatises, *De docta ignorantia* and *Idiote*, are of outstanding importance.

Two separate volumes of his important works were published in 1488 and 1490 at Strassburg by Martin Flach. These have been listed by some bibliographers under the artificial title of *Opuscula mathematica et theologica*, although there is no evidence to substantiate this title. There is sufficient internal evidence to prove that the volumes were issued independently by the same printer at approximately the same period and were considered separate books. The British Museum entered them in its great catalogue as separate items, and they were so treated in the original cataloguing of the Boston Medical Library, although they were entered erroneously in the Library's incunabula catalogue under the "Opuscula" title.

A later edition was published at Basle in 1565 in three volumes, under the title of *Opera*. A new edition of the philosophical treatises, *Philosophische Schriften, Kohlhammer Verlag*, is being published in Stuttgart. The first volume, which was issued in 1949, is beautifully printed. A new interest is being shown in Nicholas, and a number of small books containing separate works are now in press. The Heidelberg Academy of Science is issuing a special series, 1942–1949, translated into German, with comprehensive commentaries, under the title *Schriften des Nikolaus von Cues*. This series is published by the houses of Felix and Richard Meiner at Leipzig and Hamburg.

## TO IMPROVE HIS ABILITIES

On the inside of the front cover of the New England Postgraduate Assembly Program for November 15 and 16, 1938, is a printed GREETINGS to the delegates from Channing Frothingham, then president of the Massachusetts Medical Society.

Dr. Frothingham wrote, in part:

> In presenting this program of postgraduate instruction, the Massachusetts Medical Society is endeavoring to meet the growing demand of physicians everywhere to know more quickly and accurately about the new advances and the best methods in medical service.

The Assembly's reason for being has not changed since that first venture in 1938. The only changes have been mechanical and administrative. The type of program offered at the Assembly has been consistently one of quality, and, as an annual event, — with the exception of the war years, — has been anticipated with pleasure by an ever-increasing number of physicians.

The program for the Tenth Annual Session of the New England Postgraduate Assembly, scheduled to be held at the Hotel Statler in Boston, November 7–9, and sponsored by the six state medical societies of New England (a joint sponsorship that began with the 1939 Assembly), represents, — and again we quote from Dr. Frothingham's 1938 GREETINGS, —

> . . . much thought and effort on the part of the committees to provide a course of instruction that will interest and benefit any physician who is anxious and willing to improve his abilities.

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*Even Homer intimates that a medical man is to an army of more real value than many soldiers — conveying the idea, very distinctly, that the profession was recognized, and no doubt sustained by the government.*

Boston M. & S. J., *October 22, 1851*

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## MASSACHUSETTS MEDICAL SOCIETY

### DEATHS

EMERSON — William R. P. Emerson, M.D., of Boston, died on September 5. He was in his eighty-second year.

Dr. Emerson received his degree from Harvard Medical School in 1899. He was professor of pediatrics, emeritus, at Tufts College Medical School. He was a member of the New England Pediatric Society and a fellow of the American Medical Association.

His widow survives.

FIELDEN — John S. C. Fielden, Jr., M.D., of Fall River, died on September 2. He was in his sixty-fourth year.

Dr. Fielden received his degree from Jefferson Medical College in 1910. He was former chief of staff at the Union Hospital. He was a fellow of the American Medical Association.

His widow, his father, a daughter, two sons and a sister survive.

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HANRAHAN — Arthur L. Hanrahan, M.D., of Wollaston, died on September 6. He was in his fifty-third year.

Dr. Hanrahan received his degree from Boston University School of Medicine in 1931. He was a fellow of the American College of Surgeons.

His widow and a son survive.

---

HIGGINS — Clarence B. Higgins, M.D., of South Easton, died on September 20. He was in his sixty-fourth year.

Dr. Higgins received his degree from Middlesex University School of Medicine in 1918. He was a member of the staff of the Harley Hospital, Dorchester.

His widow, a son and two brothers survive.

---

## MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

### NATIONAL DEPOSITORY FOR MALARIA SLIDES

Although malaria disappeared from Massachusetts and many areas in northern United States about thirty years ago, the disease continued endemic in the southeastern states. In that area the problem continued to deplete heavily the budgets of health departments. Even there, however, the disease was decreasing rapidly at the beginning of the second World War. The fear that it would be reintroduced by returning soldiers stationed in malarious regions of the tropics did not materialize. By the end of the war public-health workers had determined to eliminate the disease from the continental United States by 1960. Soldiers returning from Korea have now raised the problem again.

Events have moved more rapidly than expected, and the disease has nearly disappeared already. Cases are being discovered so infrequently that it is important to make certain of the diagnosis by finding the parasites in the blood of the patients in every case.

When a disease becomes rare it is difficult to keep laboratory technicians in practice, and diagnostic tests are often unreliable under such circumstances. This problem has become so important in malaria at the present time that those interested in the disease have requested the Public Health Service to designate the Communicable Disease Center at Atlanta as the National Depository for Malaria Slides. It is urged that all positive slides be forwarded through state laboratories to the National Depository, where skilled technicians will confirm the diagnosis. This will make it possible to be absolutely sure that we are dealing with malaria and not some other confusing disease.

In the thirteen southeastern states in which malaria has not been completely eradicated the United States Public Health Service is sponsoring the organization of malaria surveillance and prevention teams. These teams will consist of an epidemiologist, an entomologist and an engineer. When malaria is found to be endemic in any localized area the team will ascertain why it has not been eliminated or has been re-established and will make recommendations in regard to necessary procedures.

Now that some soldiers are returning to the United States from Korea, the problem of the reintroduction of the disease arises again. When the soldiers return to this country it is no longer necessary for them to take suppressive drugs, and frequently a man who has previously had no symptoms of malaria will develop the disease.

Because the disease did not become established when thousands of soldiers were returning from tropical areas during the second World War, there is little danger that it will be brought by the men returning from Korea. However, it is important that all health departments be alerted, and if endemic malaria begins to develop the necessary steps to stamp it out will have to be taken. The danger of reintroduction into the southeastern United States is much greater, of course, than in areas in which the disease has been absent for twenty-five or thirty years.

It is believed that the introduction of DDT hastened the disappearance of malaria from the United States. DDT is very effective in killing Anopheles mosquito larvae. Since *A. quadrimaculatus*, the best transmitter in this country, breeds in still water, when DDT is sprayed where this species is found it remains effective for weeks and aids other methods in eliminating mosquitoes.

Another use of DDT has perhaps acted even more quickly against the disease. This is the spraying of the interiors of houses, particularly bedrooms, in areas in which the disease has remained prevalent.

Anopheles mosquitoes tend to remain in shelters after they have bitten malaria patients. If they have not obtained a full blood meal they tend to bite repeatedly. Those that remain in the vicinity until the malarial parasite has developed can then transfer the disease to other members of the family or to visitors.

Through spraying the upper two feet of the interior walls of houses, 99 per cent of the mosquitoes harbored in such houses are usually killed. One spraying is often effective for two or three months, since the mosquitoes alighting on the surface pick up the DDT in lethal doses.

The United States is using so much of its total production of DDT, both at home and abroad in connection with troop movements, that many parts of the world are now having difficulty in obtaining supplies. This means that many countries may have difficulty in combating malaria until the production of this insecticide has been increased sufficiently to meet the world's demands.

### CONSULTATION CLINICS FOR CRIPPLED CHILDREN IN MASSACHUSETTS

The October schedule for consultation clinics for Crippled Children in Massachusetts follows:

| Orthopedic Clinics | Date | Clinic Consultant |
|---|---|---|
| Greenfield | November 1 | Charles L. Sturdevant |
| Lowell | November 2 | Albert H. Brewster |
| Salem | November 5 | Paul W. Hugenberger |
| Haverhill | November 7 | William T. Green |
| Brockton | November 8 | George W. Van Gorder |
| Gardner | November 13 | Carter R. Rowe |
| Lynn* | November 19 | Daniel M. Killoran; John J. Crowley |
| Springfield | November 20 | Garry deN. Hough, Jr. |
| Pittsfield | November 21 | Edward J. Coughlin, Jr. |
| Worcester | November 23 | John W. O'Meara |
| Fall River | November 26 | David S. Grice |
| Hyannis | November 29 | Paul L. Norton |

| Rheumatic-Fever Clinics | Dates |
|---|---|
| North Reading | November 6, 13, 20, 27 |
| Fitchburg | November 7, 14, 21, 28 |

| Plastic Clinics | Consultant |
|---|---|
| Eastern Massachusetts (Semi-monthly) | Bradford Cannon |
| Western Massachusetts (Monthly) | Joseph M. Baker |

Physicians referring new patients to clinics should get in touch with the district health officer to make appointments. Patients are seen by appointment only.

*This clinic serves Lynn, Lynnfield, Saugus, Nahant, Revere, Chelsea, Everett and Winthrop. Referrals should be made directly to the Lynn Hospital.

## MISCELLANY

### MASSACHUSETTS TRUDEAU SOCIETY

At a meeting of the Massachusetts Trudeau Society held at the Hotel Lafayette, Boston, on June 8, the following officers were elected for 1951–1952: president, Dr. Francis Dawson, of the Middlesex County Sanatorium; vice-president, Dr. John W. Strieder, Boston thoracic surgeon; and secretary-treasurer, Dr. David S. Sherman, of the Boston Sanatorium.

## CORRESPONDENCE

### "HERPANGINA AND THE COXSACKIE VIRUSES"

*To the Editor:* Your editorial "Herpangina and the Coxsackie Viruses," which appeared in the August 23rd issue of the *Journal*, is an excellent and correct review — except for the last sentence. This refers to herpangina as adding "another to the list of disease entities caused by the Coxsackie viruses." May I respectfully point out that valid evidence for *causation* of most of the various illnesses from which Coxsackie viruses have been reportedly isolated is exceedingly slim?

The numbers of persons examined and the numbers of isolations made for each illness have been small — too small for valid statistical analysis. Isolations, in many instances, have been made from long-stored materials taken originally *only* from selected groups of ill persons; as a result (and this is also true of more recent and nonretrospective studies) there are no, — or insufficient, — data concerning control populations examined at the same time, in the same places and under the same conditions. Consequently, one can hardly credit causation of illness to viruses that might have been chance isolations — particularly when studies have not been arranged to show what role chance might play.

The last sentence of your editorial, therefore, incorrectly implies that there exist a *number* of disease entities *caused* by Coxsackie viruses. I believe, — perhaps with some prejudice but also as a result of previously published statistical

data* and the lack of comparable data from other studies,—that the only disease entity in which the evidence for causation by Coxsackie viruses even approaches adequacy is herpangina. This is not to say that other illnesses, — even perhaps some of those already reported as associated with the finding of Coxsackie viruses, — may not one day be *shown* to be caused by such viruses; at present, however, there is no published evidence providing statistical support for the presumed etiologic relation of Coxsackie viruses to such illnesses as aseptic meningitis, nonparalytic poliomyelitis, "summer grippe" or epidemic pleurodynia.

It appears, therefore, that it may be somewhat of a disservice to the readers of the *Journal* to add to the already confused concept of nonexistent "Coxsackie disease" by editorially leading them into believing that more than one disease entity has been *shown to be caused* by any of the Coxsackie viruses.

My associates, Drs. Beeman and Huebner, concur with me in this opinion.

ROGER M. COLE, M.D.

Laboratory of Infectious Diseases
National Microbiological Institute

*Note:* Without detracting from the excellent work of our correspondent and his colleagues, the editor was inclined to be somewhat less critical, or perhaps more liberal, in interpreting the contributions of other workers in this field. —ED.

REFERENCE

*Huebner, R. J., Cole, R. M., Beeman, E. A., Bell, J. A., and Peers, J. H. Herpangina: etiological studies of specific infectious disease. *J. A. M. A.* **145**:628-633, 1951.

# NOTICES

## ANNOUNCEMENTS

Dr. Thomas E. Cavanaugh, Jr., announces the removal of his office for the practice of obstetrics and gynecology from 1101 Beacon Street to 1180 Beacon Street, Brookline.

Dr. Joseph M. Miller announces the opening of an office for the practice of internal medicine at 416 Marlborough Street, Boston.

Dr. Gertrud C. Reyersbach announces the opening of an office for the practice of pediatrics at 330 Dartmouth Street, Boston.

## BURNHAM MEMORIAL HOSPITAL PEDIATRIC GRAND ROUNDS

Pediatric Grand Rounds at the Burnham Memorial Hospital for Children, Massachusetts General Hospital, have been changed from 1:30 p.m. on Tuesdays to 12:00 m. to 1:00 p.m. on Tuesdays.

## BOSTON CITY HOSPITAL HOUSE OFFICERS' ASSOCIATION

The following programs will be given in the evening lecture series of the Boston City Hospital House Officers' Association:

Tuesday evening, October 23 — "Practical Limitations and Clinical Promises of Exchange Resins," by Dr. T. S. Danowski, professor of research medicine, University of Pittsburgh School of Medicine. Discussers will be Drs. J. H. Currens and George J. Gabuzda, Jr.

Tuesday evening, October 30 — "Recent Advances in the Study of the General-Adaptation Syndrome," by Dr. Hans Selye, professor and director of the Institute of Experimental Medicine and Surgery, University of Montreal. Discussers will be Drs. George W. Thorn and William Dameshek.

Tuesday evening, November 6 — "Iron Metabolism and the Pathogenesis of Iron Deficiency Anemia," by Dr. Carl Moore, professor of medicine, Washington University School of Medicine. Discussers will be Drs. Frank Gardner and Joseph F. Ross.

These programs will be held at 7:00 p.m. in the new Cheever Amphitheatre of the Dowling Building of Boston City Hospital.

All interested persons are invited to attend.

## BOSTON STATE HOSPITAL PSYCHIATRIC SEMINAR

The Boston State Hospital announces its annual psychiatric seminar.

The seminar is open to all members of the Massachusetts Medical Society and to social workers, clinical psychologists, psychiatric nurses and occupational therapists. It meets weekly from October through January on Wednesdays at 12:00 m. in the Reception Building Auditorium, 591 Morton Street, Boston. This seminar comprises a forty-five-minute presentation and an open discussion of the topic at hand.

During the month of October psychotherapy will be the general subject of the Seminar. During November the problems of children and adolescents will be discussed. For December the subject will be psychosomatic disorders; in January the controversial areas in the field of psychiatry and its affiliated fields will be considered.

## NEW YORK INSTITUTE OF CLINICAL ORAL PATHOLOGY

The New York Institute of Clinical Oral Pathology will hold a meeting in Hosack Hall, New York Academy of Medicine, 2 East 103rd Street, on Monday, October 29, at 8:30 p.m. Dr. Hans Selye, professor and director of the Institute of Experimental Medicine and Surgery, University of Montreal, will speak on "The Role of the General-Adaptation Syndrome in Oral Pathology (with special reference to hormone treatment)."

All interested persons are cordially invited to attend.

## SOCIETY MEETINGS AND CONFERENCES

OCTOBER 19. Conference on Alcoholism. Page 512, issue of September 27.

OCTOBER 19. Clinicopathological Conference. Mallory Amphitheatre, Boston City Hospital. 12:00 m.

OCTOBER 20. Massachusetts Association of Medical Technologists. Page 590, issue of October 11.

OCTOBER 20–25. American Academy of Pediatrics. Royal York Hotel, Toronto, Ontario, Canada.

OCTOBER 22. Beth Israel Hospital House Officers' Colloquium. Page 590, issue of October 11.

OCTOBER 22–24. American Association of Blood Banks. Page 316, issue of August 23.

OCTOBER 22–27. Medicomilitary Symposium. Page 234, issue of August 9.

OCTOBER 23. Hampden District Medical Society. Page 548, issue of October 4.

OCTOBER 23 AND 30 AND NOVEMBER 6. Boston City Hospital House Officers' Association. Notice above.

OCTOBER 26. Research Conference. Dowling Amphitheatre, Boston City Hospital. 12:00 m.

OCTOBER 29. New York Institute of Clinical Oral Pathology. Notice above.

OCTOBER 29. Beth Israel Hospital House Officers' Colloquium. Page 590, issue of October 11.

OCTOBER 29. Medicomilitary Symposium. Page 548, issue of October 4.

OCTOBER 29–NOVEMBER 2. American Public Health Association. Page 316, issue of August 23.

OCTOBER 31. New England Obstetrical and Gynecological Society, Hotel Somerset, Boston.

NOVEMBER 2 AND 3. Eastern Section, American Trudeau Society. Page 350, issue of August 30.

NOVEMBER 4 AND 5. American Society for the Study of Arteriosclerosis. Page xv, issue of July 12.

NOVEMBER 5–9. American College of Surgeons. Page 388, issue of September 6.

NOVEMBER 5, 19 AND 26. Beth Israel Hospital House Officers' Colloquium. Page 590, issue of October 11.

NOVEMBER 7. Salmon Memorial Lecture. Page 548, issue of October 4.

NOVEMBER 7–9. New England Postgraduate Assembly. Hotel Statler, Boston. Program, page xiii, issue of October 11.

NOVEMBER 7–19. Pan-Pacific Surgical Association. Page 820, issue of May 24.

NOVEMBER 8. Diverticulitis — Conservative or Radical Management. Dr. Joseph Tartakoff. Pentucket Association of Physicians. 8:30 p.m. Haverhill.

NOVEMBER 9. Rocky Mountain Harvard Medical School Alumni Association. Page 548, issue of October 4.

NOVEMBER 13. Springfield Academy of Medicine. Page 548, issue of October 4.

NOVEMBER 14. Salmon Memorial Lecture. Page 548, issue of October 4.

NOVEMBER 14. Northeastern New York Radiological Society. University Club, Albany, New York.

NOVEMBER 20. Salmon Memorial Lecture. Page 548, issue of October 4.

DECEMBER 2. American Academy of Dental Medicine. Page 548, issue of October 4.

DECEMBER 11–19. International Congress on Mental Health. Page xiii, issue of July 26.

DECEMBER 14 AND 15. Association for Research in Nervous and Mental Disease. Page 958, issue of June 21.

MAY 1–3. American Goiter Association. St. Louis, Missouri.

*(Notices concluded on page xvii)*

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*Gray, L.: J. Clin. Endocrinol. 3:92 (Feb.) 1943.*

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## NOTICES (*Concluded from page 628*)

### District Medical Societies

**Hampden**

October 23. Hotel Kimball, Springfield. 6:30 p.m.

**Hampshire**

November 7. Northampton State Hospital, Northampton.
January 2. Veterans Hospital, Northampton.
March 5. Cooley-Dickinson Hospital, Northampton.
May 7. Annual Meeting. Jones Library, Amherst.

### Calendar of Boston District for the Week Beginning Thursday, October 25

Thursday, October 25

*9:00–10:00 a.m. Grand Rounds. Robert Breck Brigham Hospital.
*9:00–10:00 a.m. Grand Rounds. House of the Good Samaritan.
*12:00 m.–1:00 p.m. Recent Advances in Oxygen Therapy. Dr. Maurice Segal, Stearns Auditorium, New England Center Hospital.

Friday, October 26

*9:00–12:00 m. Combined Medical and Surgical Staff Rounds. Peter Bent Brigham Hospital.
*10:00 a.m. Surgical Clinic. South End Health Unit, 57 East Concord Street, Boston.
*11:00 a.m.–1:00 p.m. Medical Grand Rounds. Stearns Auditorium, New England Center Hospital.
*12:00 m.–1:30 p.m. Surgical Pathological Conference. Dr. MacMahon. Pratt Lecture Hall, New England Center Hospital.
12:00 m. Research Conference. Dowling Amphitheatre, Boston City Hospital.
*1:30 p.m. Tumor Clinic. Outpatient Department, Mount Auburn Hospital, Cambridge.
*2:00–4:00 p.m. Therapeutic Conference. Dr. McCombs. Stearns Auditorium, New England Center Hospital.
*4:00–6:00 p.m. X-Ray Conference. Dr. Merrill Sosman. Pratt Lecture Hall, New England Center Hospital.

Monday, October 29

*11:30 a.m.–12:15 p.m. Clinical Conference. South End Health Unit, 57 East Concord Street, Boston. Dr. Cleaveland Floyd in charge.
*12:00–1:00 p.m. Hematology Conference. Dr. Dameshek. Stearns Auditorium, New England Center Hospital.
*12:15–1:15 p.m. Clinicopathological Conference. Main Amphitheatre, Peter Bent Brigham Hospital.
5:15 p.m. Staff Meeting. Harris Hall, New England Deaconess Hospital.
8:00 p.m. House Officers' Colloquium. Auditorium, Beth Israel Hospital.

Tuesday, October 30

*12:00 m.–1:30 p.m. Surgical Grand Rounds. Stearns Auditorium, New England Center Hospital.
*12:00 m.–1:00 p.m. Pediatric Rounds. Burnham Memorial Hospital for Children, Massachusetts General Hospital.
*12:15–1:15 p.m. Clinicoroentgenological Conference. Peter Bent Brigham Hospital.
7:00 p.m. Boston City Hospital House Officers' Association. New Cheever Amphitheatre, Dowling Building.

Wednesday, October 31

*11:00 a.m.–12:00 m. Medical Clinic (Children's Medical Center). Amphitheatre, Children's Hospital.
*12:00 m. Boston State Hospital Psychiatric Seminar. Reception Building Auditorium, 591 Morton Street, Boston.
*12:00 m.–1:00 p.m. Clinicopathological Conference (Children's Medical Center). Amphitheatre, Peter Bent Brigham Hospital.
*12:00 m.–1:00 p.m. Medical Gynecology Conference. Dr. Joseph Rogers. Stearns Auditorium, New England Center Hospital.
*2:00–3:00 p.m. Combined Clinic of all services (Children's Medical Center). Amphitheatre, Children's Hospital.

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